

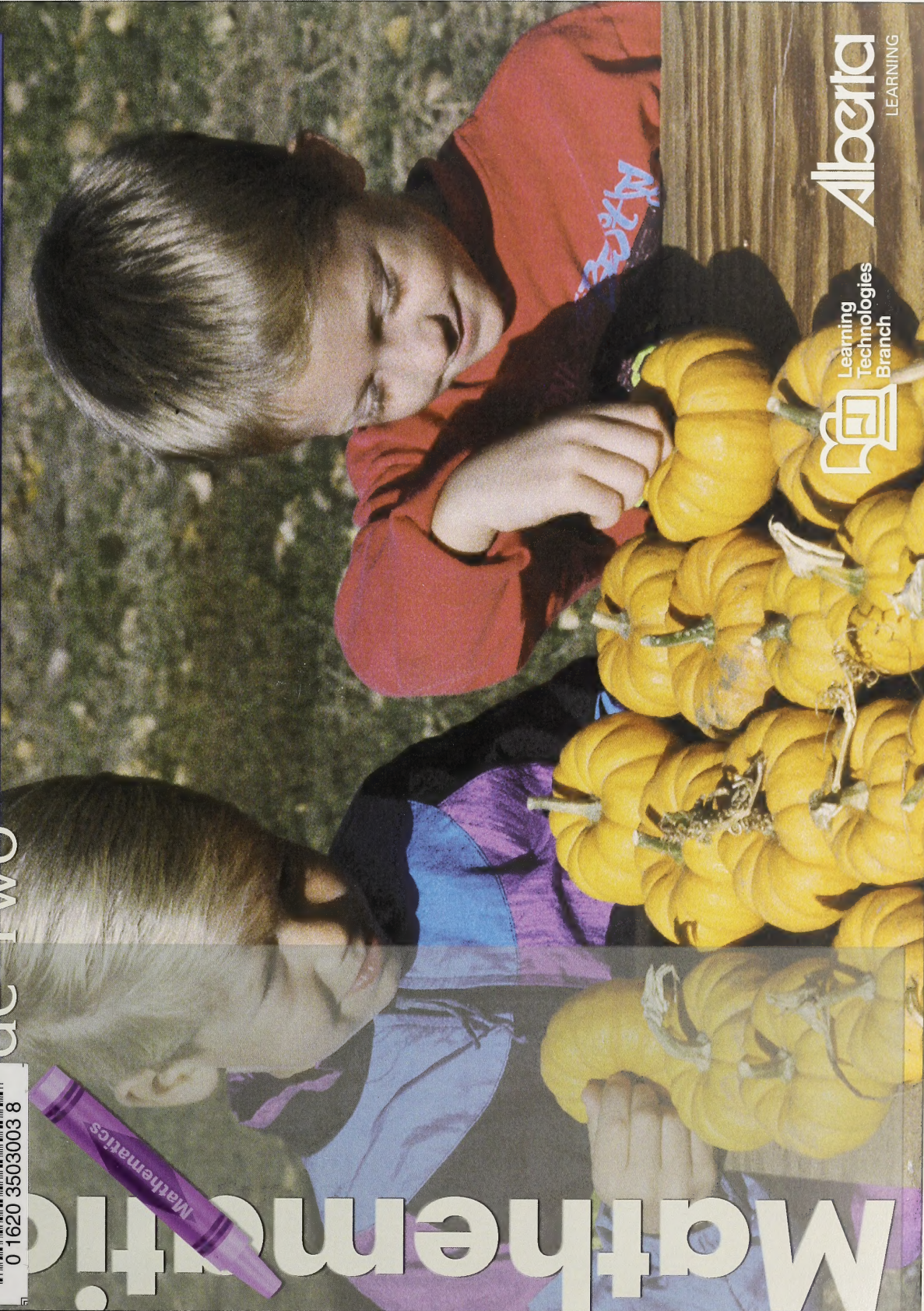
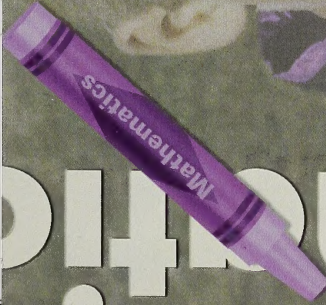
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Module 9: Fun with Fractions



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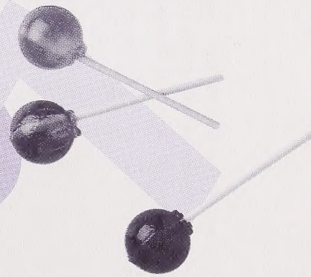
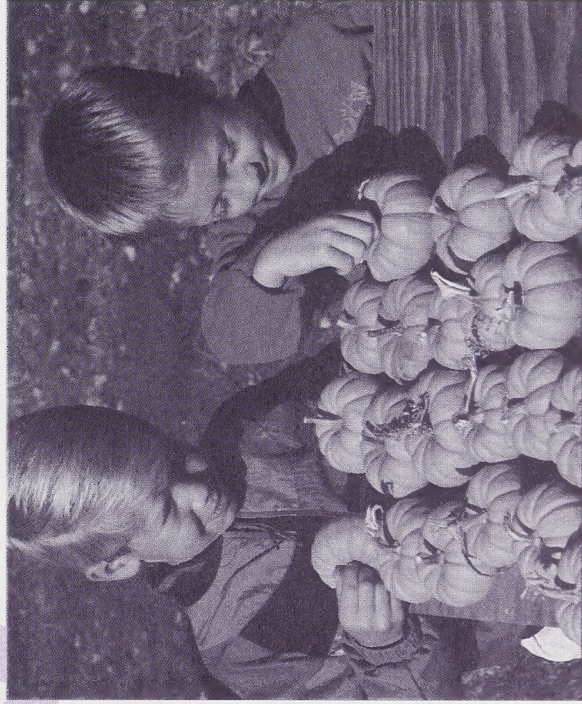


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Grade Two Mathematics: Module 9

Fun with Fractions 43



Grade Two Mathematics
Module 9: Fun with Fractions
Student Module Booklet
Learning Technologies Branch
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Teachers	✓
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Home Instructor	✓
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Other	



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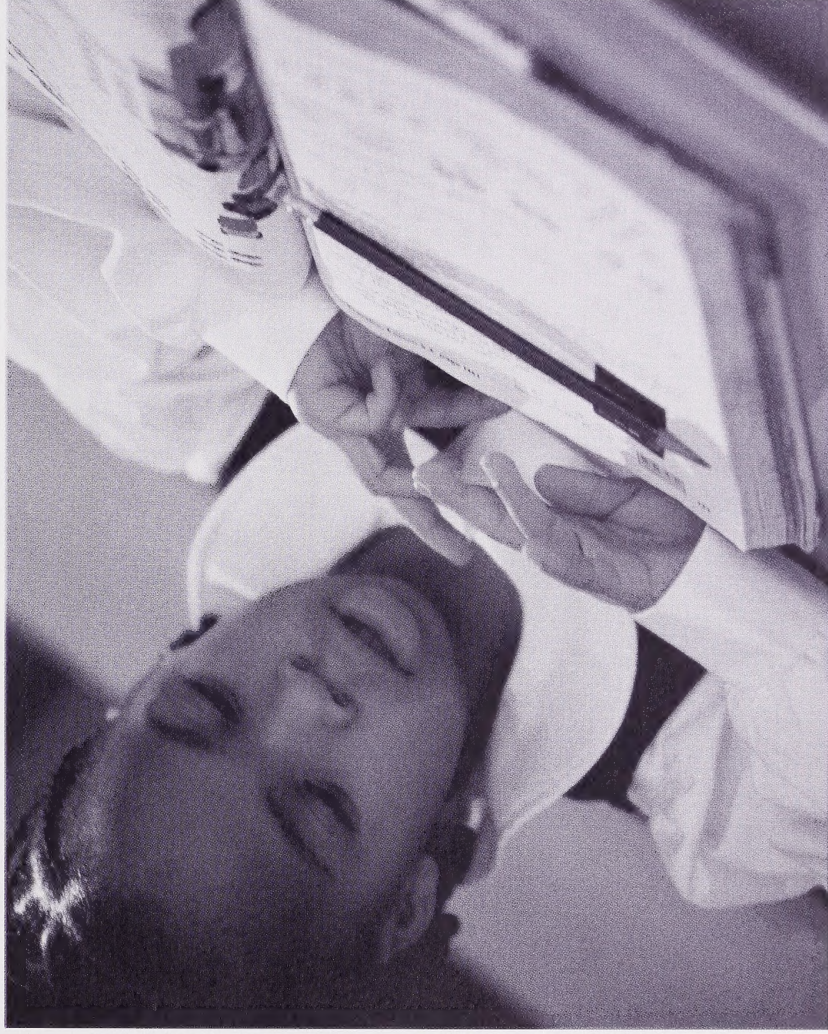
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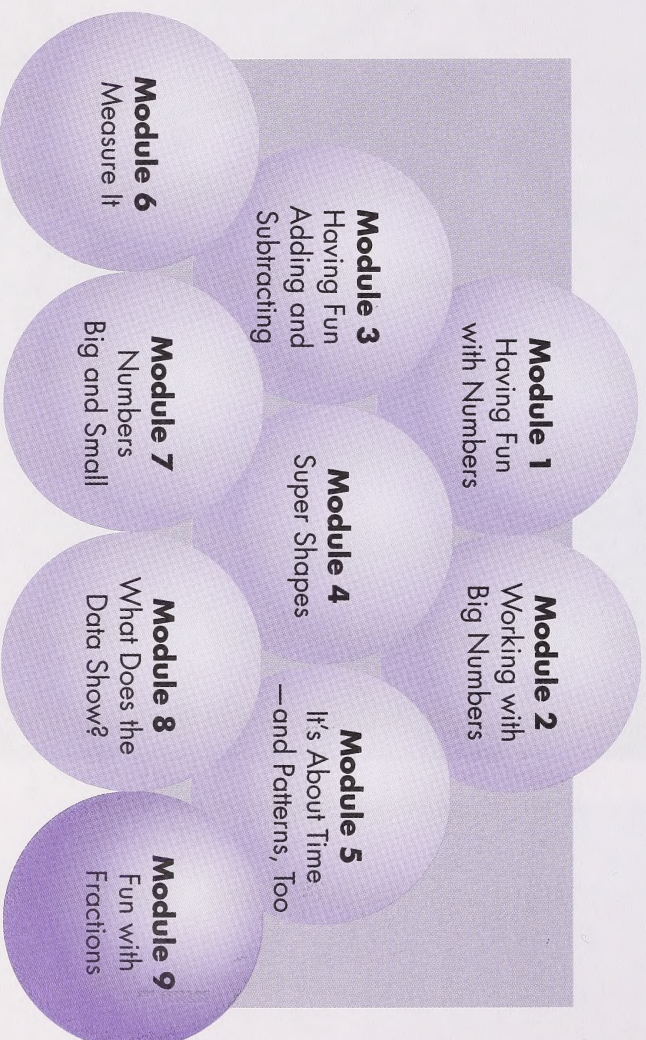
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Welcome to Grade Two Mathematics



Have you ever shared a cookie with a friend? Did you try to break it evenly so that you each got the same amount of cookie? Have you tried to figure out how tall you are? Can you tell how much time you have to do something? How much does something weigh? In Grade Two Mathematics, you will learn how to do these activities.

Look at the picture on this page. It gives the titles of the Student Module Booklets you have been using. You are now using Module 9: Fun with Fractions.



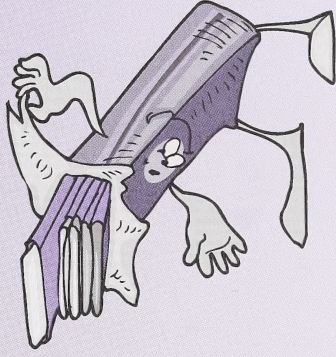
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Fun with Fractions



Has someone ever offered you half a stick of gum, but when you got your piece it didn't look like half at all? Have you ever had a third of a chocolate bar or a fourth of a pizza? Do you know what that means?

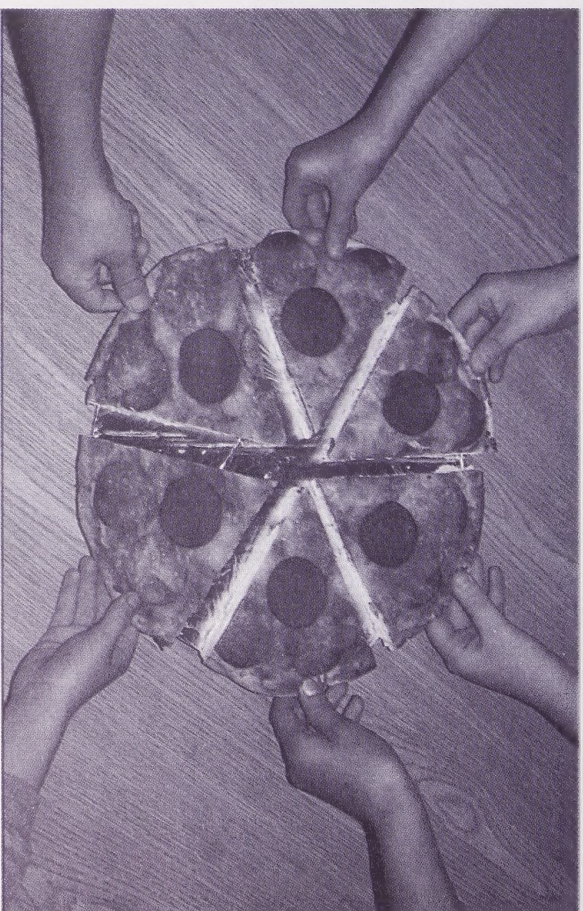




Have you ever tried giving someone directions or tried following directions? Did you find it hard or easy?

In this module, you will learn about dividing things into equal parts and that these parts are called fractions. You will learn how to give and follow directions. You will also learn to make symmetrical shapes. You will even learn what symmetrical means!

So get ready to learn a lot!



Day 1: Looking Back



Looking back over what you learned is always an excellent idea. Today you will look back to review what you did in Module 7.

Can you remember how to count by 2s, 5s, and 10s to 1000?

Do you remember how to count by 25s to 100?

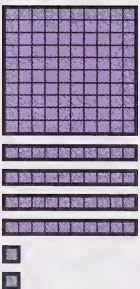
Do you remember how to sort items so that they can be equally grouped?

Do you remember doing all of these things? Let's see how well you do.

See how well you remember what you learned in Module 7.

1. Print the number for each of these in the place-value charts.

a.



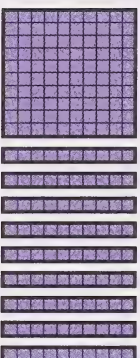
Hundreds	Tens	Ones

c.



Hundreds	Tens	Ones

b.



Hundreds	Tens	Ones

d.



Hundreds	Tens	Ones



2. Count by ones. Print the numbers that follow the given numbers.

a. 179, , , , , , , , , ,

c. 104,

, , , , ,

b. 163, , , , , , , , ,

d. 195,

, , , , ,

3. Count by twos. Print the numbers that follow the given numbers.

a. 622, , , , , , , , ,

c. 780,

, , , , ,

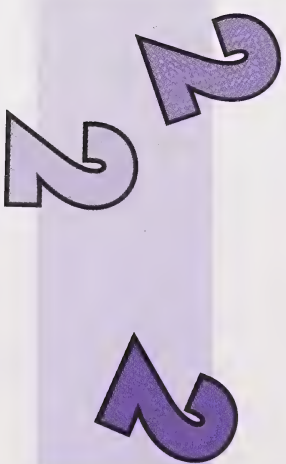
b. 456, , , , , , , , ,

d. 334,

, , , , ,

4. Count by twos to fill in the blanks in the chart.

548					
	564				
		582			
			598		



5. Count by fives. Print the numbers that follow the given numbers.

a. 465,

, , , ,

c. 705,

, , , ,

b. 180,

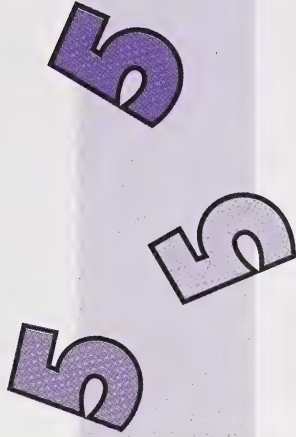
, , , ,

d. 830,

, , , ,

6. Count by fives to fill in the blanks in the chart.

210							
	250						
			295				
						345	



7. Count by tens. Print the numbers that follow the given numbers.

- a. 110,

,

,

,

,

,
- c. 950,

,

,

,

,

,
- b. 570,

,

,

,

,

,
- d. 620,

,

,

,

,

,

8. Count by tens to fill in the blanks in the chart.

390						
	470					
			560			
						660

10 10 10

9. Count by 25s. Print the correct numbers in the boxes.

a. , 75,

c. 25, , ,

b. 50, ,

d. , , 100

10. Count the quarters and print the value of each row in the box.

a.



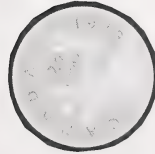
¢

b.



¢

c.



¢

d.



¢

If necessary, review counting by 25s with the student.

11. Using whatever pictures you like, draw the groups and fill in the boxes.

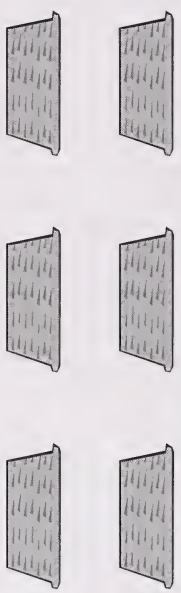

<p>a. 4 groups of 2 = <input type="text"/></p>	<p>c. 3 groups of 5 = <input type="text"/></p>
<p>b. 2 groups of 6 = <input type="text"/></p>	<p>d. 5 groups of 4 = <input type="text"/></p>

12. Solve the problems and draw a picture for each one.

<p>a. There are four cows in the barn. How many legs are there in all?</p> <p>There are <input type="text"/> legs in all.</p>	<p>c. Norm has six bags of marbles. Each bag has three marbles. How many marbles are there in all?</p> <p>There are <input type="text"/> marbles in all.</p>
<p>b. Lucy baked seven cookies. Each cookie has three raisins in it. How many raisins are there in all?</p> <p>There are <input type="text"/> raisins in all.</p>	<p>d. There are ten cats in the house. How many eyes are there in all?</p> <p>There are <input type="text"/> eyes in all.</p>



13. Draw a picture for each one.

<p>a. Share 24 cherries in six baskets.</p> <div data-bbox="853 162 1034 751">  </div> <p>There are <input data-bbox="692 315 792 418" type="text"/> cherries in each basket.</p>	<p>c. Share 30 petals on five flowers stems.</p> <div data-bbox="873 965 1008 1537">  </div> <p>There are <input data-bbox="692 1118 792 1221" type="text"/> petals on each stem.</p>
<p>b. Ralph bought 14 juice boxes. He has to share them among seven people. How many juice boxes will each person get?</p> <p>Each person will get <input data-bbox="235 469 336 580" type="text"/> juice boxes.</p>	<p>d. Nona has 12 cookies to share among three people. How many cookies will each person get?</p> <p>Each person will get <input data-bbox="235 1281 336 1392" type="text"/> cookies.</p>

Day 2: Equal Parts

Have you ever had to share your toys with a brother, a sister, or a friend? If you have, you already know how important it is to share things equally.

Sometimes it works perfectly. Sometimes it doesn't.

Turn the page to find out more about equal parts.



Lesson 1

Elena's friend Darla shares everything with her sister. They even wear the same clothes. When Darla or her sister Marla have candy, cards, or stickers, they always share them equally.

How many of the following items will each girl get? Print your answer in the box, and tell your home instructor how the two girls will share the items equally.

There are ten pieces of toffee.

Each girl gets pieces.

There are fourteen stickers.

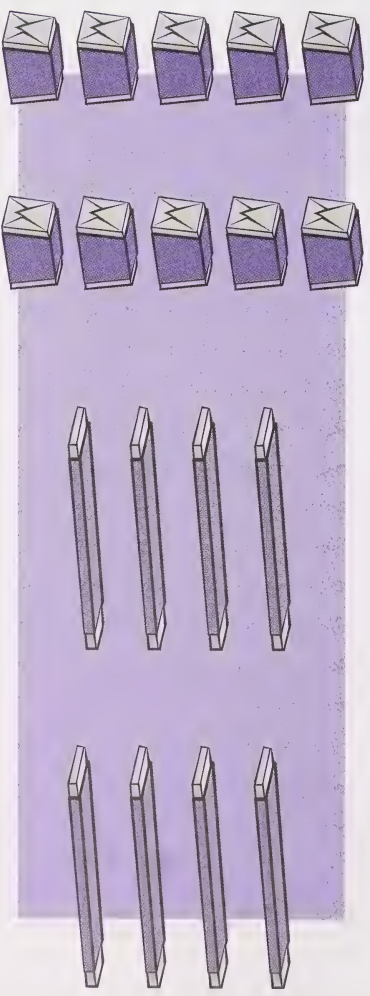
Each girl gets stickers.

There are eight sticks of gum.

Each girl gets sticks.

There are six quarters.

Each girl gets quarters.

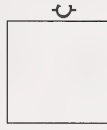


Darla and Marla each got the same amount. When you have the same amounts, you have equal amounts.

They each got an equal amount of the toffee, an equal amount of the gum, an equal amount of the stickers, and an equal amount of the quarters. Each of them got 5 of the 10 pieces of toffee, 7 of the 14 stickers, 4 of the 8 sticks of gum, and 3 of the 6 quarters.

Are these the answers you gave? Good for you if you got them right!

How much money did each girl get?



Tell your home instructor how you got that answer.

Lesson 2

Your home instructor gave you four sets of counters. Count the number of objects in each set, and share them equally with your home instructor. After you count and share each set, record the results in the chart that follows.

Have the student discuss how the girls will share the items. Elicit the idea that sharing the items equally means that each girl gets the same amount. The girls will each get five pieces of toffee, seven stickers, four sticks of gum, and three quarters. The student may understand the meaning of one-half.

Elicit the response that each girl got three quarters. Three quarters equals 75¢.

Read the Home Instructor's Guide before beginning the lesson.

Give the student the four sets with even numbers of counters.

Set One

Name of the Object	Total Number	My Share	My Mom's Instructor's Share

Set Two

Name of the Object	Total Number	My Share	My Mom's Instructor's Share

Set Three

Name of the Object	Total Number	My Share	My Mom's Instructor's Share

Set Four

Name of the Object	Total Number	My Share	My Mom's Instructor's Share

Are the total numbers in each set even or odd? _____

How do you know that? _____

If you said even, you are right! The total number of counters are even because the second digit of each is either a 2, 4, 6, 8, or 0 and they can be shared equally between two people. You just proved it.

Circle the snowflakes in each question to make 2 equal sets.



There are snowflakes.

There are snowflakes.

One set has snowflakes.

One set has snowflakes.



There are snowflakes.

One set has snowflakes.



There are snowflakes.

One set has snowflakes.



Lesson 3

Your home instructor just gave you a variety of shapes. Take the square, and fold it into two equal shapes.

How do you know each piece is equal? Tell your home instructor.

Look carefully at the square you just folded. Are the two parts the

same size? Circle **Yes** or **No**.

Are they the same shape? Circle **Yes** or **No**.

If you said yes to both questions, then you have folded the square into two equal shapes!

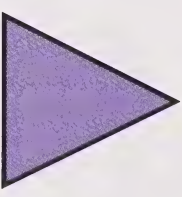
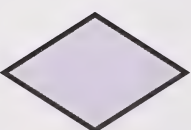
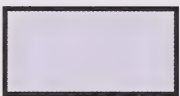
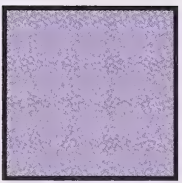
Try to fold each of the other shapes into equal parts. Draw a line on the fold to show the equal parts.

Give the student the shapes from the Student Folder.

Help the student realize that the two parts are of equal size and shape.

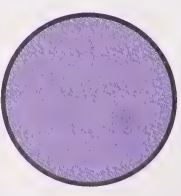
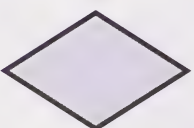
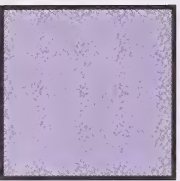
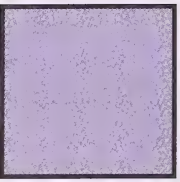


Now take the same shapes you folded into equal parts and see if you can fold each one into equal parts a different way.



1. Which shapes were you able to fold into equal parts more than one way?

2. Draw lines on the shapes to show two ways they can be folded into two equal parts.



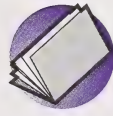
Were you able to fold the heart and triangle in different ways to show equal parts? Circle **yes** or **no**.

Tell your home instructor why or why not.

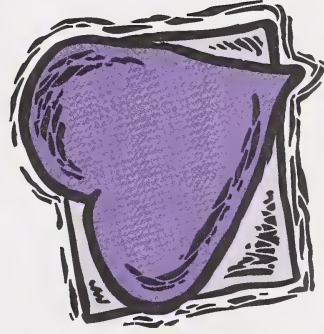
Tell your home instructor how you know you folded the other shapes into equal parts.



For more practice with equal parts, go to the Extension Activities.



Go to Assignment Booklet 9A.



Encourage the student to observe that when you fold the heart and triangle in different ways, the two pieces are not of equal size and shape. Show some ways a circle can be folded into equal parts.

The student should realize that the shapes are folded into two pieces of equal size and shape.

Day 3: Is That One-Half?

Which part of this gingerbread cookie would you like to eat? Is each piece one-half?



Which slice of watermelon would you rather have? Are the two slices equal?

What does half mean?

Jasper has a problem today. Go on to help him solve it.

Lesson 1

Jasper's friend Lyle made a large submarine sandwich. He cut it into two pieces to share with Jasper. "Here's your half Jasper," he said. Jasper looked at the piece Lyle had given him and said, "Hey, that's not half. My piece is much smaller." "Whoops!" Lyle said, "I guess I gave you the smaller half."



Look at the sandwich. Do you think Jasper got half of the sandwich? Tell your home instructor.

To have one-half of something, you must have one of two parts that are the same size.

Each part must be equal.

Lyle said he gave Jasper the smaller half. Was Lyle right?

Discuss that the sandwich is not cut into one-half because the pieces are not the same size.

Can you have a smaller or a larger half? Circle

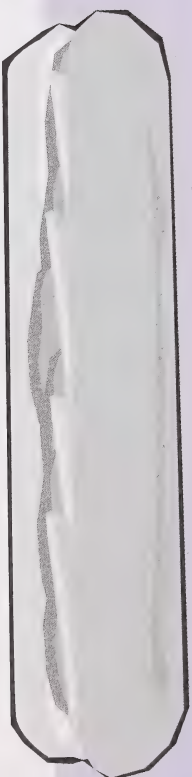
Yes

or

No.

If you said no, you were right. If two parts are not the same size, or equal, they cannot be halves. So Lyle was wrong. The two pieces of the sandwich he made were not halves. They were just two unequal pieces of the sandwich.

1. Draw a line on the sandwich to show it cut in half. Tell your home instructor why you drew the line where you did.



Have the student draw a line on the sandwich, and explain why he or she thinks it is half. Elicit the observation that the parts are equal. Then have the student write the explanation on the lines.

2. Explain why the line you drew divides the sandwich in half.

Lesson 2

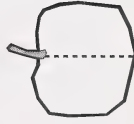
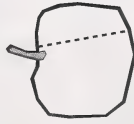
1. Look at the oranges. Colour the orange that is cut in half red.



Each piece of the orange you coloured red

shows _____.

2. Look at the apples. Colour the apple that is cut in half purple.



Each piece of the apple you coloured purple

shows _____.

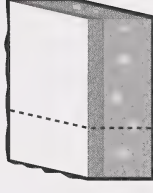
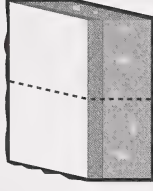
3. Look at the cookies. Colour the one that is cut in half blue.



Each piece of the cookie you coloured blue

shows _____.

4. Look at the brownies. Colour the one that is cut in half green.



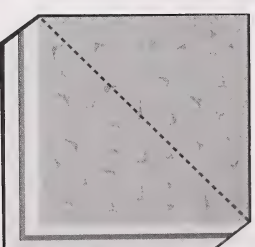
Each piece of the brownie you coloured green

shows _____.

For each of the three squares, elicit the response from the student that the parts are the same size, are equal, or show the same amount. You can tell they are equal because the two pieces are the same size. The student would get one-half of the square.



Look at this date-nut square. Do you think the two parts show the same amount?

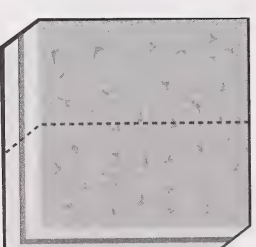
Circle  or .



How can you tell they are equal cuts? How much date-nut square will you get if you get one piece? Tell your home instructor.

Look at this date-nut square. Do you think the two parts show the same amount?

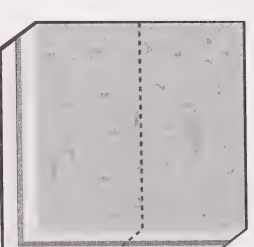
Circle  or .



How can you tell they are equal cuts? How much date-nut square will you get if you get one piece? Tell your home instructor.

Look at this date-nut square. Do you think the two parts show the same amount?

Circle  or .



How can you tell they are equal cuts? How much date-nut square will you get if you get one piece? Tell your home instructor.

Lesson 3

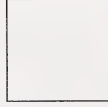
When something is cut in half, there are two parts that are the same amount. The two parts are the same size. Each part is half of the object. It is called a half, or one-half.

When you talk about both, you say **halves**. For example, when you cut a sandwich in half, you have two halves. You can give yourself one-half and someone else the other half.

This is one way of writing one-half: $\frac{1}{2}$.

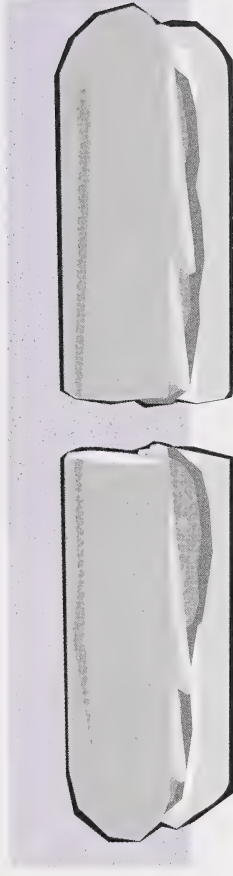
You may have seen this symbol before.

Look at Lyle's sandwich here, and see if Jasper's piece is equal to Lyle's piece.



How many parts are there?

Yes, there are two parts. That's the number that goes on the bottom. $\frac{1}{2}$



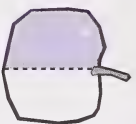
How many parts of the sandwich did Jasper get?

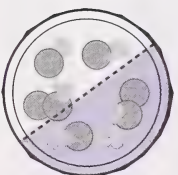
Yes, Jasper got one part of the sandwich, or one-half. That's the number that goes on the top. $\frac{1}{2}$

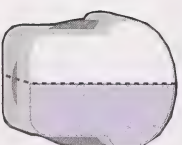
Jasper got one-half, or $\frac{1}{2}$, of the sandwich.

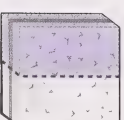
Ensure the student understands that one-half of each object is shaded and that the symbol for one-half is $\frac{1}{2}$. Have the student print $\frac{1}{2}$ under the objects.

Look at these objects. Each one is cut in half. One-half, or $\frac{1}{2}$, of each object is shaded. Print the symbol that shows one-half under each object. Remember 1 goes above the line and 2 goes below the line.

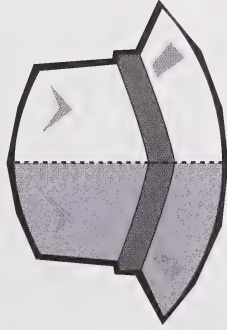








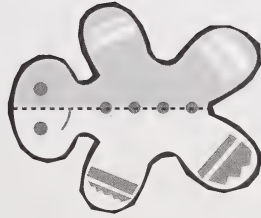
1. Circle the objects that show one-half, or $\frac{1}{2}$.



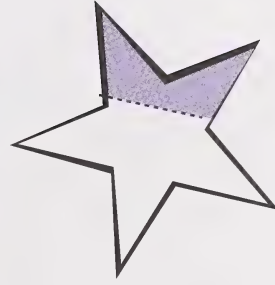
a.



d.



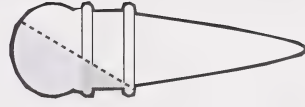
b.



e.



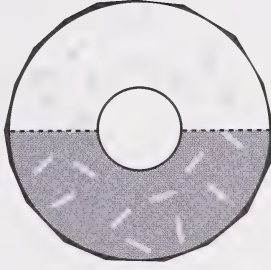
c.



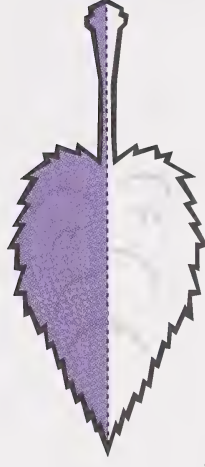
f.



g.

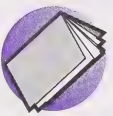


h.



i.

2. Look around you. How many objects can you see that can be divided in half? Draw four on this page, and then draw a line to divide them in half. Colour one-half of each object you draw.



Go to Assignment Booklet 9A.

Day 4: Two Halves—One Whole



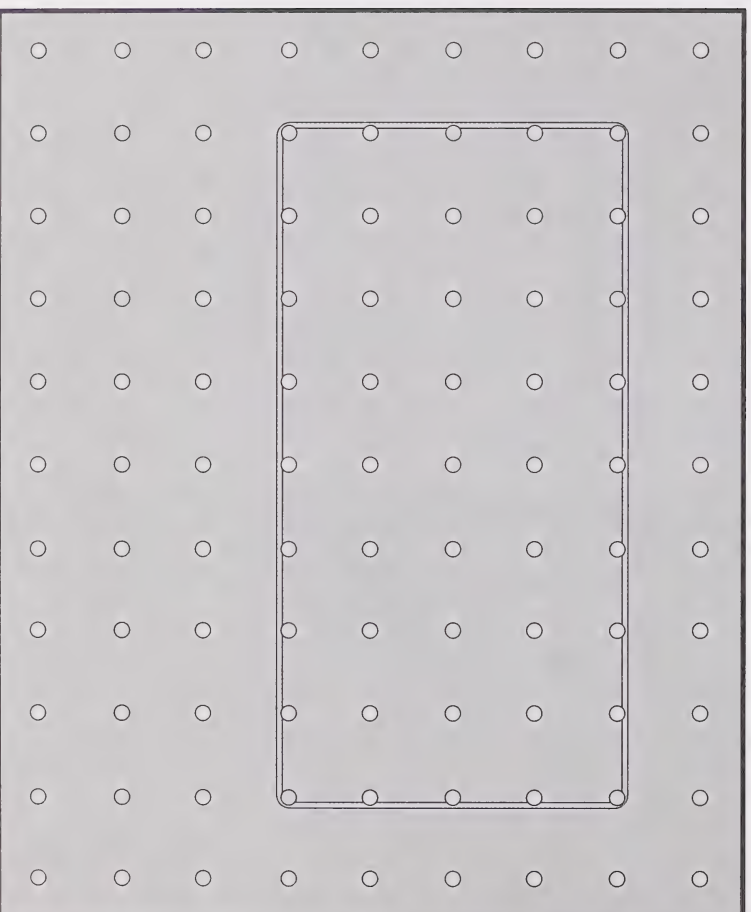
Today you will use some different tools to show and work with halves. Some of them will be shapes you make. Others will be good enough to eat.

You will explore ways of showing that two halves make one whole.

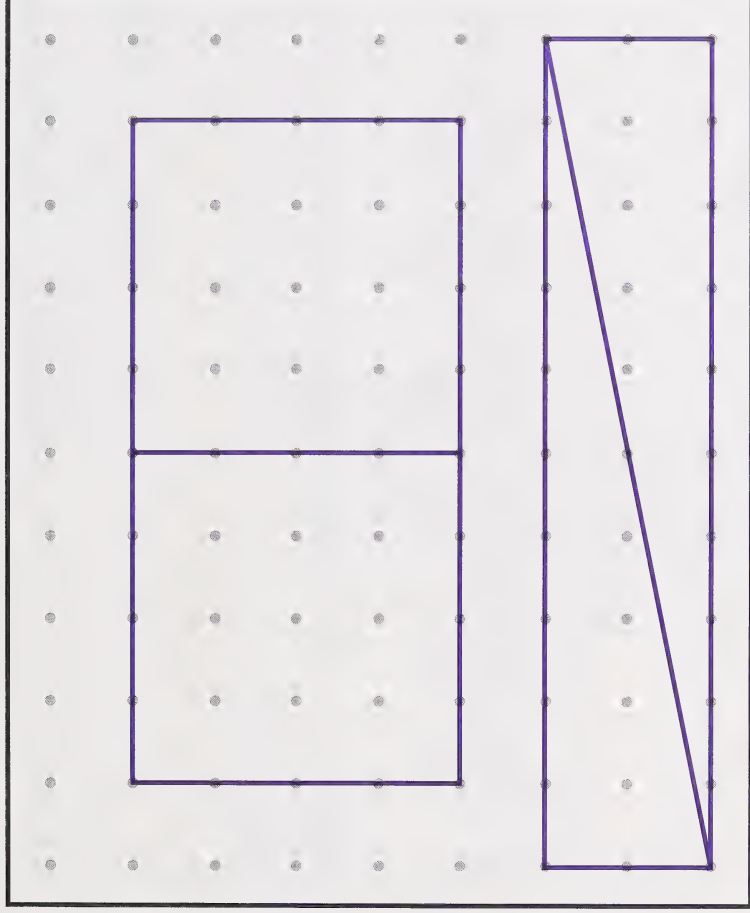
Lesson 1

Jasper enjoyed working with halves. His home instructor told him he could show halves on his geoboard.

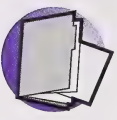
To get started, Jasper made a rectangle on his geoboard with an elastic band.



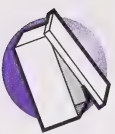
Then Jasper drew the same rectangle on dot paper and drew a line to show half.



Jasper continued to make shapes on the geoboard and divide them in half. He divided them in different ways using another elastic band. Then he drew them on dot paper.



Get dot paper out of your Student Folder.



Take your geoboard out of your Math Box.

Use your own geoboard to make a shape with an elastic band. With another elastic band, divide the shape into halves as many different ways as you can. When you finish, draw the shape on your dot paper. Draw a line through it to show the halves. Then try dividing a triangle, a square, and a rectangle into halves.

Lesson 2

One Saturday, Elena and the other members of the bird club were bird-watching all day. Elena invited everyone over to her home afterwards for pizza. Elena's father was making the pizzas. He wanted to know how many he had to make. He told Elena he was making small pizzas and that one pizza would feed two people.



Elena counted eight people in all who would be eating pizza. She knew that each person would get half a pizza. She had to figure out how many pizzas her father would have to make.

Can you help Elena? If each person gets one-half of a pizza and there are eight people, how many pizzas do they need?

Think about how you will solve this problem. Talk about it with your home instructor.



How many pizzas does Elena's father need to make?

How did you solve your problem?

This is what Elena did. She drew a bunch of pizzas and divided each one in half. Go ahead and draw in the lines on Elena's pizzas.



She then counted eight halves. She knew she didn't need to count any more.

There were too many pizzas. She crossed out the ones she didn't need. You can do the same thing. Cross out the extra pizzas. Elena discovered that she needed four pizzas to feed everyone. She told her father how many pizzas to make.

Do you have four pizzas left? You were right if you did!

Like Elena, you can use manipulatives or you can draw a picture to help you solve a problem.

Assist the student with the problems as needed. The student can use the linking cubes or draw pictures as in the last problem.

Using manipulatives, solve these problems. If you prefer, you may draw a picture for each one. You will need a separate sheet of paper to do so.

1. How many pizzas would Elena need if there were four people to

feed?

2. How many pizzas would Elena need if there were two people to

feed?

3. How many pizzas would Elena need if there were ten people to

feed?

4. How many pizzas would Elena need if there were fourteen people

to feed?

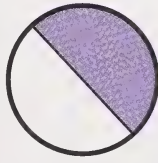
Lesson 3

You know that $\frac{1}{2}$ means one-half of something.

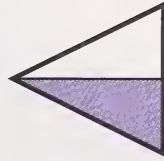
The shaded part of this rectangle shows one-half.



The shaded part of this circle shows one-half.



The shaded part of this triangle shows one-half.



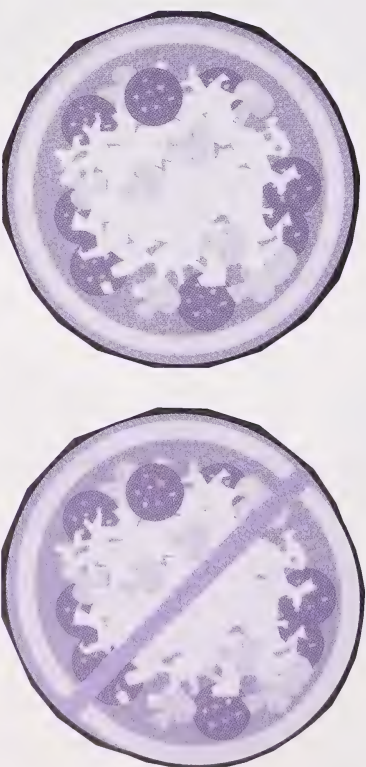
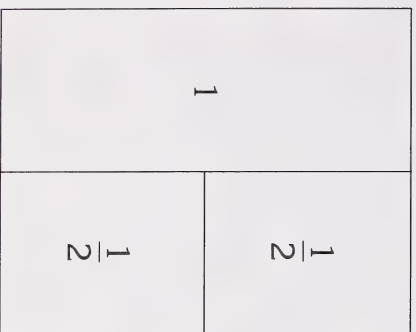
This rectangle is still a whole rectangle. In mathematics, it is called one whole.



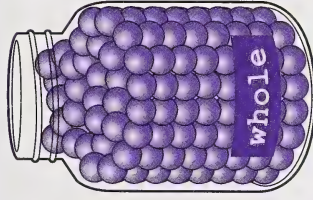
The first circle hasn't been divided in half either. It is still a whole circle. It is one whole. When it is divided into halves you can see that the two halves are equal to the whole.



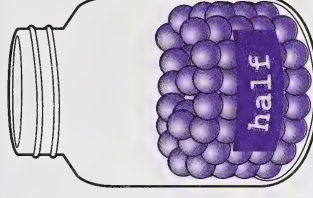
Here's another way of showing a whole and halves.



This is a whole jar of marbles.



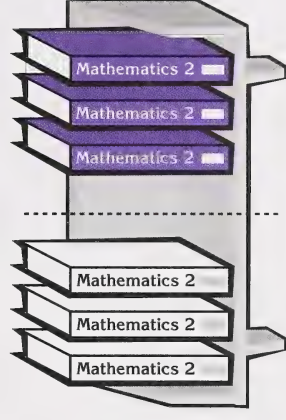
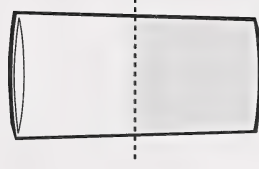
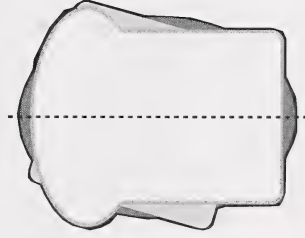
This is half a jar of marbles.



One-half, or $\frac{1}{2}$, is a fraction. A fraction is a smaller part, piece, or amount of a whole.

Look at the pictures. They all show $\frac{1}{2}$ of something.

You can eat $\frac{1}{2}$ of a sandwich,
 drink $\frac{1}{2}$ of a glass of milk, and
 read $\frac{1}{2}$ of the books on your
 bookshelf. All these show one-half.



For more practice identifying halves, go to the Extension Activities

Day 5: More Equal Parts



Sharing things equally between two people means each one gets one-half. Elena's friend Darla and her sister Marla could always decide how much they each got. They divided things in half.

Jasper has two brothers. When Jasper and his brothers all want to share things, halves don't work.

What do you think they have to do to share things equally?

Remember they each want to get the same amount.

Lesson 1

Jasper and his two brothers like to share everything they have, too. When the boys have candy, cards, or stickers, they always share them equally.

How many of the following items will each boy get? Print your answer in the box, and tell your home instructor how the boys will share the items equally.

There are 15 stickers.

Each boy gets

stickers.

Each boy gets

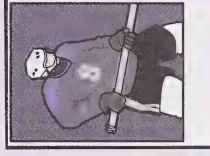
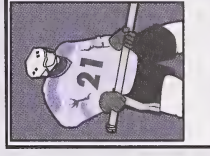
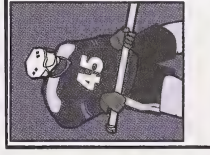
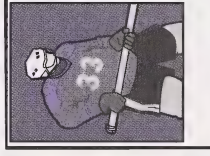
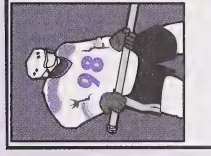
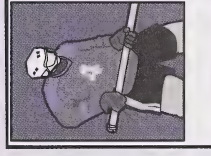
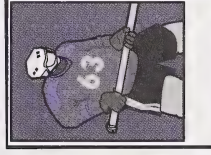
nickels.

There are 12 hockey cards.

Each boy gets

hockey cards.

Have the student discuss how the boys will share the items. Encourage the student to realize that sharing the items equally means they each get the same amount. The boys will each get five stickers, four hockey cards, and three nickels.



The student may know that one part of something divided into three equal parts is called one-third.

Each boy would receive two sticks of gum.

The three boys shared the items equally. They each got the same amount.

If the boys shared 6 sticks of gum, how many sticks would each boy get?

Each boy got sticks of gum.

Did you say each boy would get two sticks of gum? You are right!

So Jasper and each of his brothers got five stickers, four hockey cards, two sticks of gum, and three nickels. If these are the answers you gave, you are right!

How much money did each boy get?

¢

Elicit the response that each boy got three nickels. Three nickels equals 15¢.

Tell your home instructor how you got that answer.

Lesson 2

Your home instructor gave you four sets of counters. Count the number of objects in each set, and then share them equally into three groups. After you count and share each set of counters, record the total number and the number in each group in the chart.

Set One

Name of the Object	Total Number	Group 1	Group 2	Group 3

Give the student four bags or containers of counters divisible by three. Refer to the Home Instructor's Guide.



Set Two

Name of the Object	Total Number	Group 1	Group 2	Group 3

Set Three

Name of the Object	Total Number	Group 1	Group 2	Group 3

Set Four

Name of the Object	Total Number	Group 1	Group 2	Group 3

Look at these bells. Circle the bells in each question to show three equal groups.



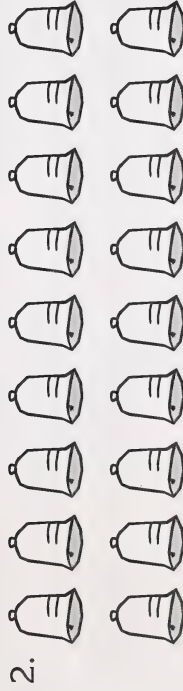
There are bells.

One groups has bells.



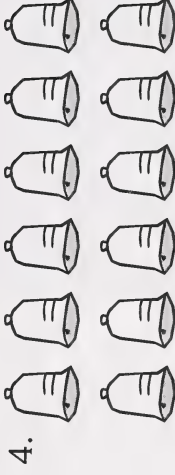
There are bells.

One group has bells.



There are bells.

One group has bells.



There are bells.

One group has bells.

5.



6.



There are

bells.

There are

bells.

One group has

bells.

One group has

bells.

Lesson 3

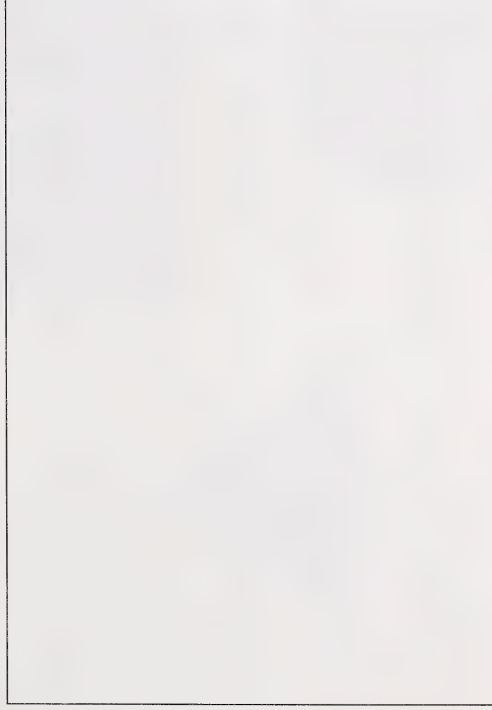
Your home instructor just gave you a piece of paper. Find a way to fold the paper into three equal parts.

Did you find a way to fold the paper into equal parts?

You might have found it difficult. It is easier to fold a paper into two equal parts than it is to fold a paper into three equal parts.

Give the student a sheet of $8\frac{1}{2} \times 11$ paper.

Draw lines in the box to show how you folded your paper.



You divided the whole sheet of paper into three parts.

How do you know you folded it into three equal parts? Tell your home instructor.

Look carefully at the paper you just folded. Are the three parts the same size? Circle **yes** or **no**.

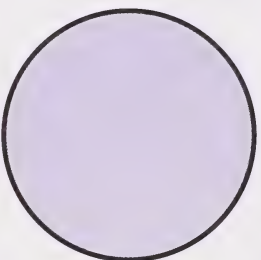
If you said yes, then you have folded the paper equally!

Elicit the answer that the three parts are of equal size.

Explain how each equal part is one part of the whole sheet of paper.



There are many ways you can show three equal parts with shapes. Can you think of a way to divide the circle into three equal parts? Try it.



Did you think of a way to divide the circle? Look at this circle.

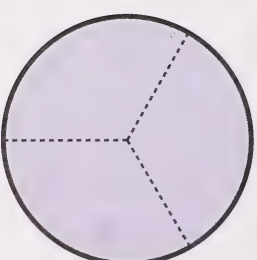
Is this circle divided into three equal parts? Circle

Yes

or

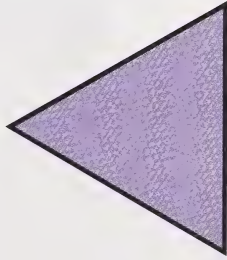
No.

Why or why not?

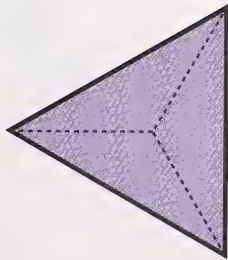


The circle is divided into three equal parts because all the parts are the same size. Is that what you wrote? You are right if you did.

Can you think of a way to divide the triangle into three equal parts? Try it.



Did you think of a way to divide the triangle?
Look at this triangle.



Did you divide it like this? This triangle is divided into three equal parts because all the parts are the same size. They are equal.

For each of the three pictures, elicit the response from the student that the parts are the same size, are equal, and show the same amount. You can tell they are equal because the three pieces are the same size.

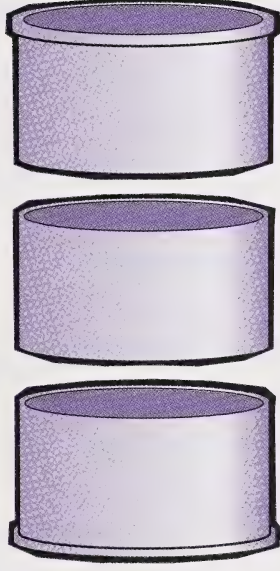
Lesson 4

Look at each of the pictures, and then answer the questions.



Look at the shamrock. Do you think the three parts show the same amount? Circle  **Yes** or  **No**.

How can you tell they are equal? _____



Look at the barrel. Do you think the three parts that are cut show the same amount?

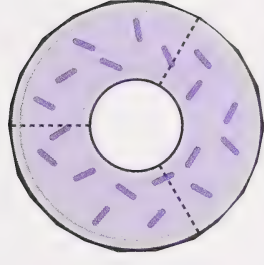
Circle **Yes** or **No**.

How can you tell they are equal cuts? _____

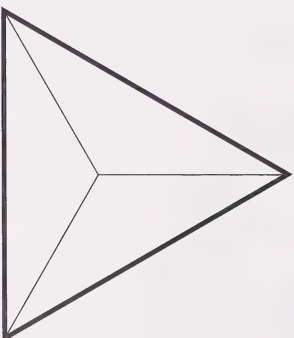
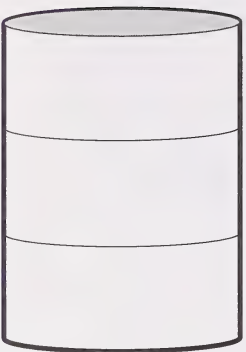
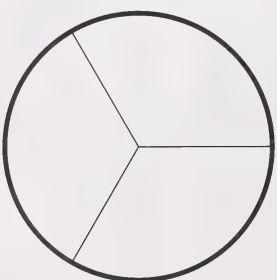
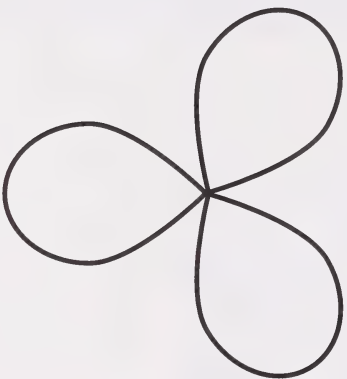
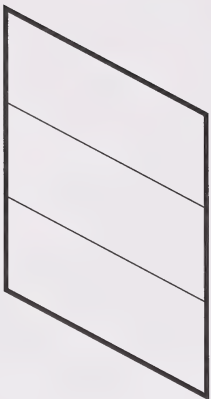
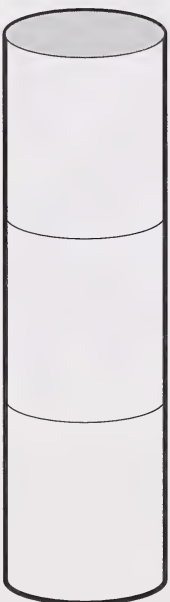
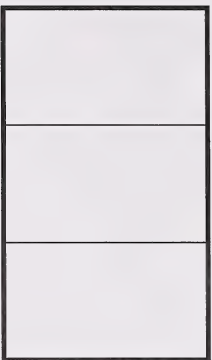
Look at the doughnut. Do you think the three parts that are cut show the same amount?

Circle **Yes** or **No**.

How can you tell they are equal cuts? _____



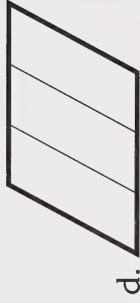
1. In each picture, colour one of the three equal parts.



2. Which objects show three equal parts? Circle them.



a.



d.



b.



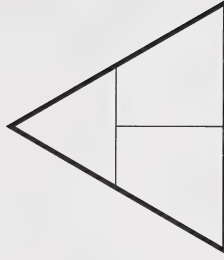
e.



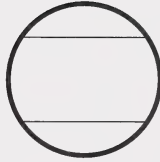
c.



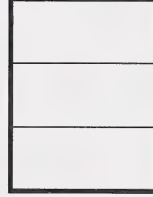
f.



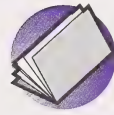
g.



h.



i.



Go to Assignment Booklet 9A.

Day 6: Is That One-Third?



When a cake is cut into thirds, how many pieces are there?

Could you eat a third of a cake?

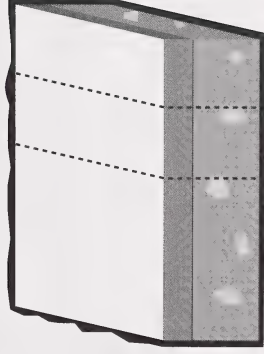
Dividing some things into thirds is not always simple.

Today you will get to do just that. See how many things you can divide equally into thirds.

Lesson 1

Elena helped her father bake a chocolate cake. She was going to share it equally with her father and Jasper. She asked Jasper to cut it into three equal pieces. She told him that when you divide something into three equal parts, each part is called one-third. This is how Jasper cut the cake.

Elena said, “Jasper, you cut the cake into three pieces, but they’re not equal! Now who’s going to get the smaller pieces?” Jasper cut the cake into three pieces, but are they thirds?



Circle **Yes** or **No**.

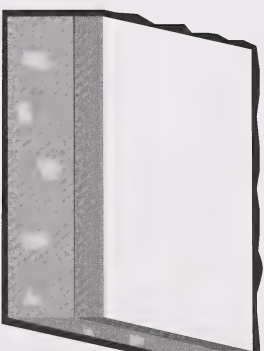
Why aren’t they thirds?

Discuss how the cake is not cut into thirds because the pieces are not equal.

Have the student draw lines on the cake and explain why he or she thinks they are thirds. Elicit the response that the parts are the same size. Then have the student write the answer on the lines.

When you have one-third of something, you have one part of the three parts that are the same size. All three parts must be equal to be thirds.

Draw the lines on the cake where Jasper should have cut it.



Explain why the lines you drew divide the cake into thirds.

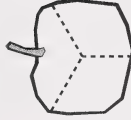
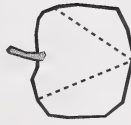
1. Look at the oranges. Colour the orange that is cut into thirds orange.



Each piece of the orange you coloured orange

shows _____.

2. Look at the apples. Colour the apple that is cut into thirds yellow.



Each piece of the apple you coloured yellow

shows _____.

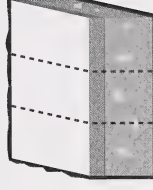
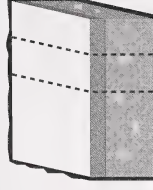
3. Look at the cookies. Colour the one that is cut into thirds pink.



Each piece of the cookie you coloured pink

shows _____.

4. Look at the brownies. Colour the one that is cut into thirds brown.



Each piece of the brownie you coloured brown

shows _____.

Lesson 2

When something is cut into thirds, there are three equal parts. Each part is a third of the object, or one-third.

This is one way of writing one-third: $\frac{1}{3}$. You may have seen this symbol before. When Jasper baked a cake with his mother, this is how he cut it to share equally with Elena and his mother.

Look at Jasper's cake. How many parts are there?

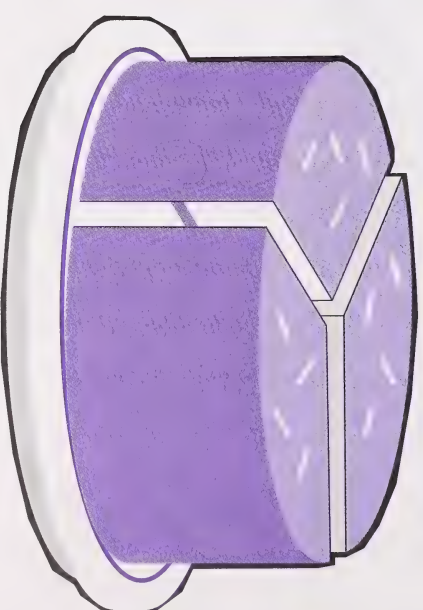
The total number of parts goes on the bottom.

$$\frac{1}{3}$$

How many parts of the cake did Elena get?

Yes, Elena got one part of the cake, or one-third. That's the number that goes on the top.

$$\frac{1}{3}$$

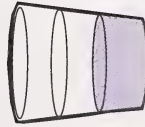


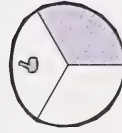
Elena got one-third, or $\frac{1}{3}$, of the cake.

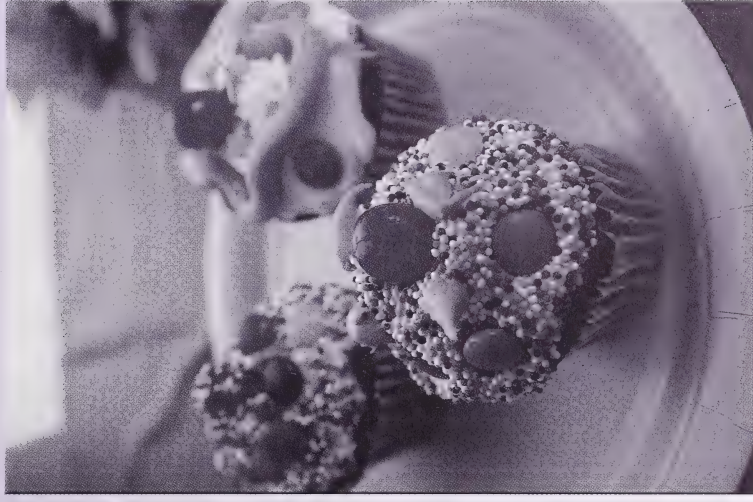
Look at these objects. Each one is divided into thirds. One-third, or $\frac{1}{3}$, of each is shaded. Print the symbol that shows one-third in the box. Remember, 1 goes above the line and 3 goes below the line.





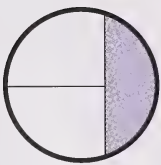




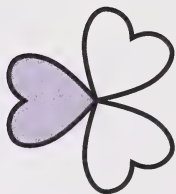


Circle the objects that show one-third, or $\frac{1}{3}$.

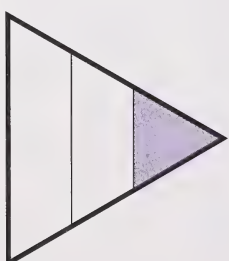
a.



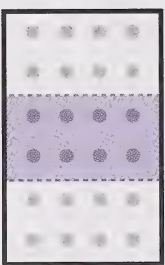
d.



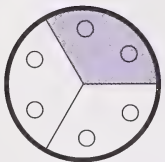
g.



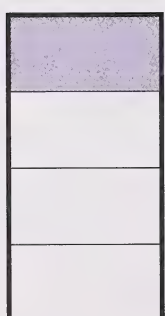
b.



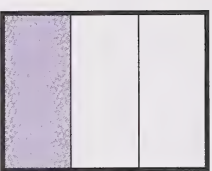
e.



h.



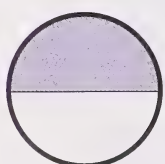
c.



f.



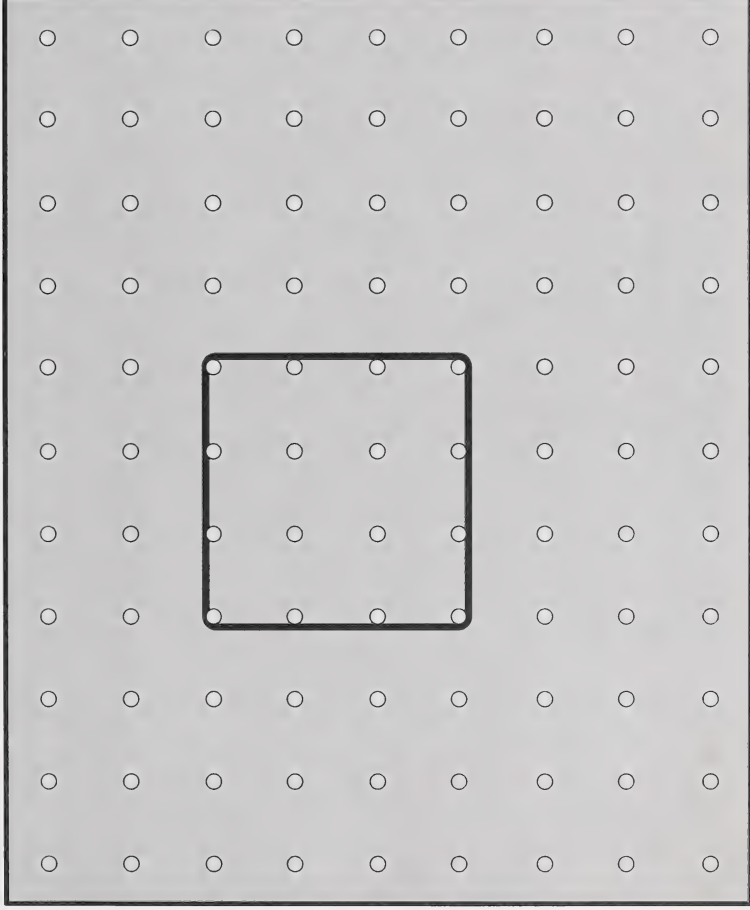
i.



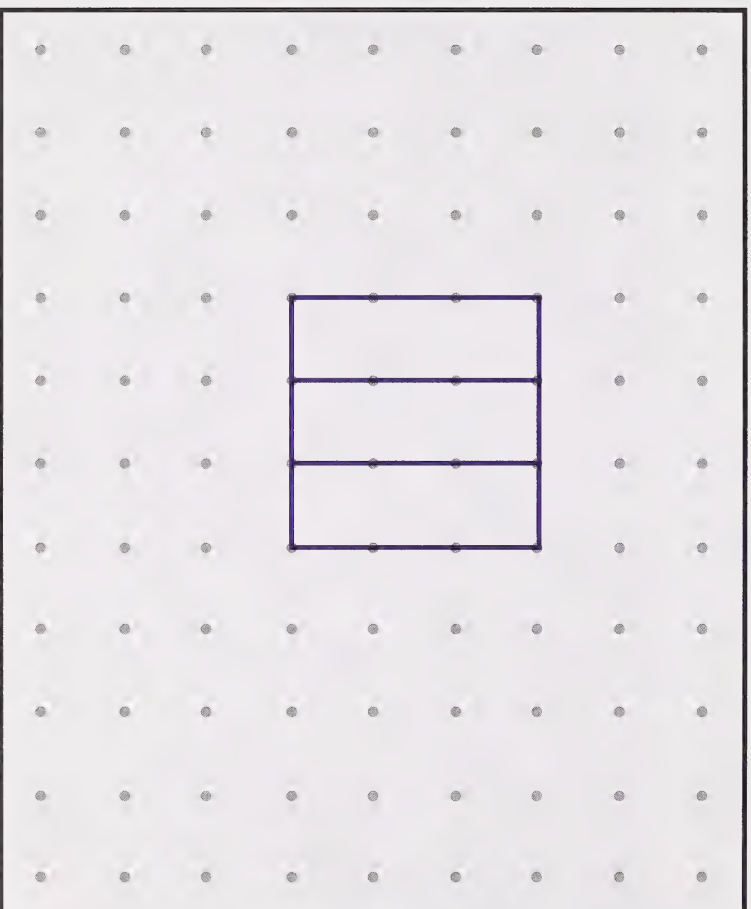
If you circled b, c, d, e, and f, you know one-third!

Lesson 3

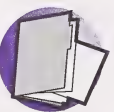
Jasper made a square on his geoboard with an elastic band.



Then Jasper drew the same square on dot paper and drew lines to show thirds.



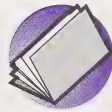
Jasper continued to make other shapes on the geoboard and divide them into thirds.



Get dot paper out of your Student Folder.

Use your geoboard to make a shape with an elastic band. With other elastic bands, divide the shape into thirds. When you finish, draw the shape on the dot paper. Draw lines through it to show thirds. Try dividing a triangle, a square, and a rectangle into thirds.

Look around you. How many objects can you see that can be divided into thirds? Draw three on this page, and then divide them in thirds. Colour one-third of each object you drew.



Go to Assignment Booklet 9A.

Day 7: Sharing Thirds

Today you will do more sharing. You will try different ways to show a whole, a half, and a third.

You will discover ways of using your manipulatives to solve problems.

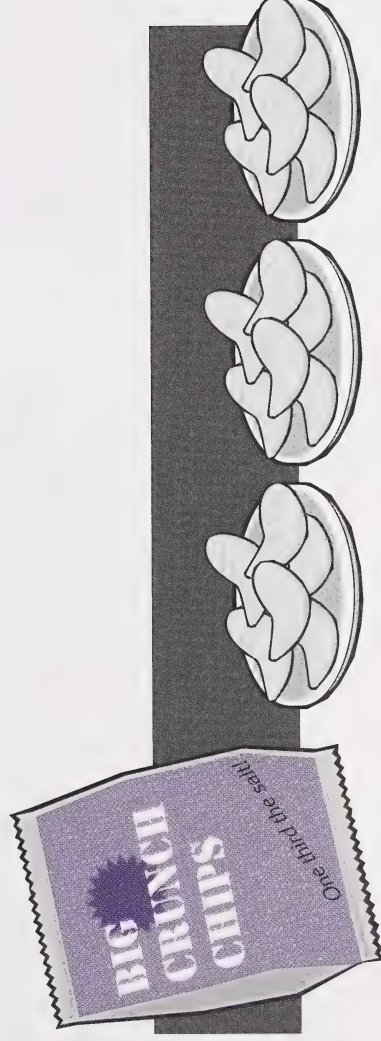
Get ready to do some great work with fractions today.



Lesson 1

Jasper's scout leader told the boys he was going to buy large bags of chips for everyone to eat after their meeting. There are nine boys in Jasper's troop. He told the boys that each bag would feed three people. He asked if anyone knew how many large bags he would have to buy.

Jasper had been studying fractions. He told his leader he could figure out how many bags to buy. Can you?



If each person gets one-third of a bag of chips and there are nine people, how many bags of chips do they need?

Think about how you will solve this problem. Talk about it with your home instructor.

How many bags of chips would Jasper's scout leader have to buy?

Did you say the scout leader would have to buy three bags of chips? You were right if you did!

How did you solve your problem?

This is what Jasper did. He used linking cubes. He knew there was one bag of chips for every three boys. Each cube represented one boy. So he linked three cubes together to show that they would share one bag of chips. He kept doing that until he reached nine cubes.



You can use manipulatives, or you can draw a picture to solve a problem.

.....

Using manipulatives, solve these problems. If you prefer, you may draw a picture for each one. You will need a separate sheet of paper to do so.

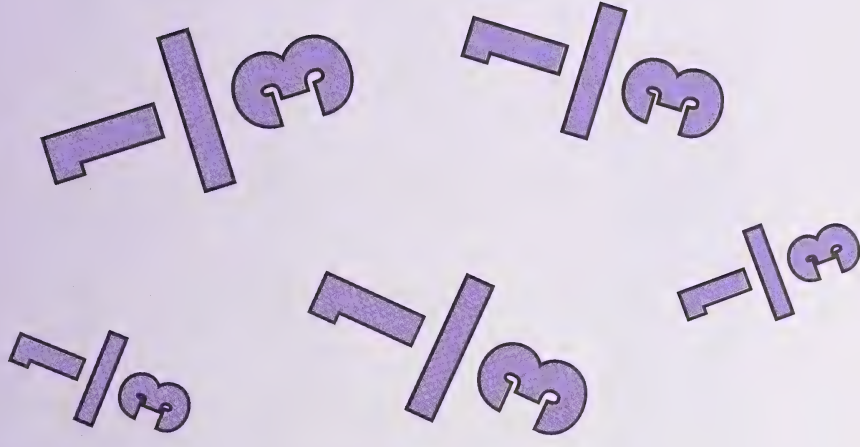
1. How many bags of chips would you need for 12 people if each of them got one-third of a bag?

2. How many bags of chips would you need for 6 people if each of them got one-third of a bag?

3. How many bags of chips would you need for 15 people if each of them got one-third of a bag?

4. How many bags of chips would you need for 3 people if each of them got one-third of a bag?

Assist the student as needed with the problems. The student can use the linking cubes or draw pictures.



5. How many bags of chips would you need for 21 people if each of them got one-third of a bag?

6. How many bags of chips would you need for 18 people if each of them got one-third of a bag?

Lesson 2

1. a. What does this rectangle show? _____



b. What fraction does the shaded part show? _____





c. What does this circle show? _____



d. What fraction does the shaded part show? _____



e. What does this triangle show? _____



f. What fraction does the shaded part show? _____

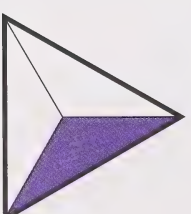
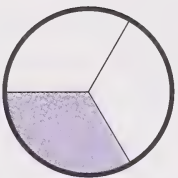
You know that $\frac{1}{3}$ is a fraction that means one-third of something.

The shaded part of this rectangle shows one-third.

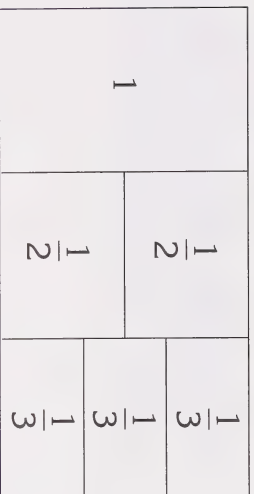


The shaded part of this circle shows one-third.

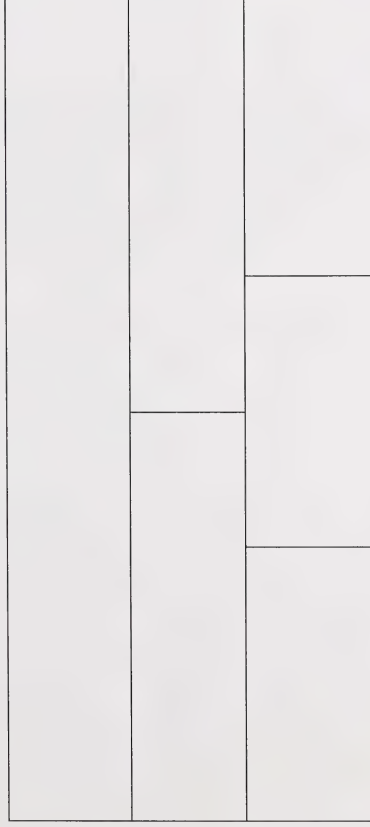
The shaded part of this triangle shows one-third.



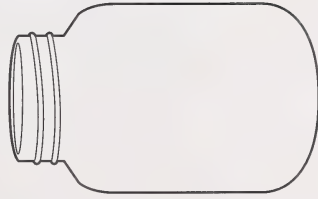
This chart shows a whole, halves, and thirds.



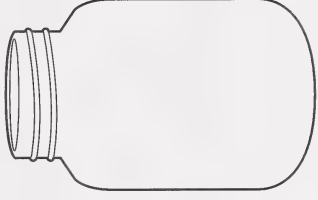
2. Fill in this chart to show a whole, halves, and thirds.



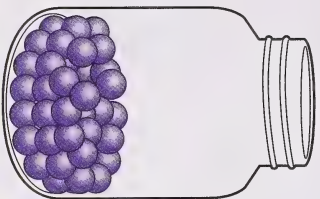
3. Draw marbles in the jar so that the whole jar is full. Write whole beside it.



4. Draw marbles in the jar so that it is half full. Write half beside it.



This jar of marbles is one-third full.

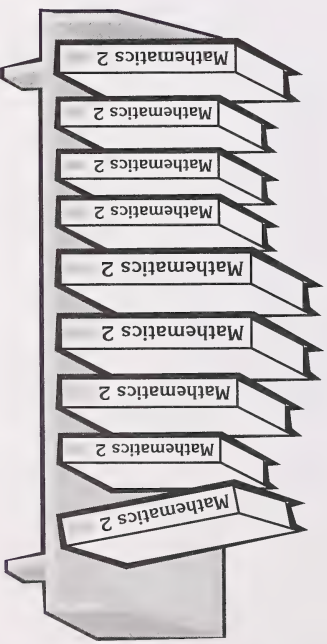


one-third

5. Colour this glass so it shows that it is one-third full of orange juice.



6. Colour $\frac{1}{3}$ of the books.



Day 8: Among Friends



Now you know about showing a whole, a half, and a third. Can you divide things into even smaller equal parts?

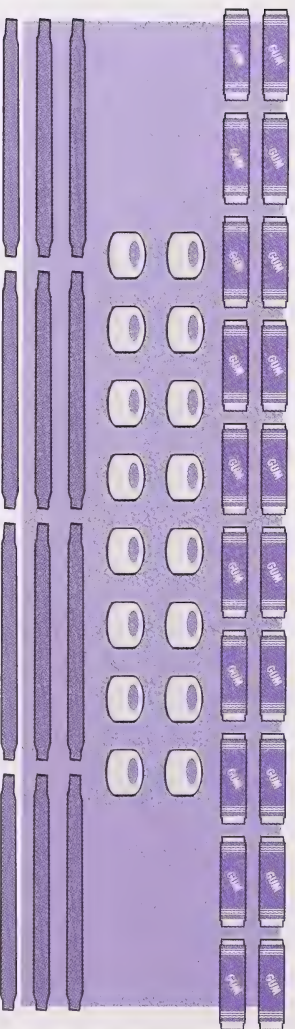
Jasper and Elena are going to get together with Darla and Marla. They will need to share things among all four of them.

When you are among friends, you need to know how to divide things equally. Today you will practise doing just that.

Have the student discuss how the children will share the items. The student should understand that sharing the items equally means they each will get the same amount. They will each get three pieces of licorice, five sticks of gum, four mints, and two dimes.

Lesson 1

Jasper and Elena met Darla and Marla one afternoon at the movie theatre. They bought licorice, mints, and gum. They decided to share everything equally among the four of them.



How will Jasper, Elena, Darla, and Marla share these items? How many of the items will each child get? Print your answer in the box, and tell your home instructor how the children will share the items.

There are 12 pieces of licorice. Each child gets pieces of licorice.

There are 20 sticks of gum. Each child gets sticks of gum.

There are 16 mints. Each child gets mints.

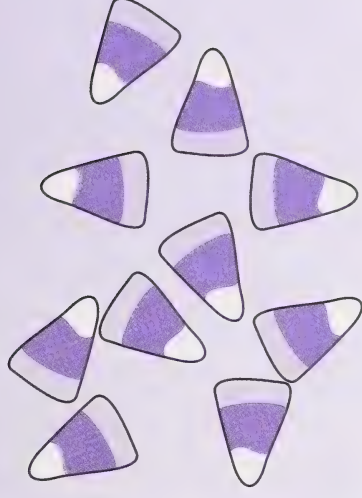
They have eight dimes. Each child gets dimes.

The children shared the items equally. They divided the items four ways. They each got one-fourth.

Do you remember what you call each part of something that is divided into two equal parts?

Did you say one-half? You are right. When something is divided into two equal parts, it is divided into halves.

Tell the student that when something is divided into four equal parts, each part is one-fourth of the whole.



What do you call each part of an object that is divided into three equal parts?

Did you say one-third? You are right. When something is divided into three equal parts, it is divided into thirds.

What do you call each part of an object that is divided into four equal parts?

You are right. When something is divided into four equal parts, it is divided into fourths.

So Jasper, Elena, Darla, and Marla each got three pieces of licorice, five sticks of gum, four mints, and two dimes. If these are the answers you gave, you were right!

How much money did each child get?

¢

Tell your home instructor how you got that answer.



Help the student work out the amount of money. Each child got two dimes equals 20¢.

Lesson 2

Your home instructor gave you four sets of counters. Count the number of objects in each set. Then share them equally in groups of four. After you count and share each set of counters, record the total number and the number of each group in the chart.

Set One

Name of the Object	Total Number	Group 1	Group 2	Group 3	Group 4

Set Two

Name of the Object	Total Number	Group 1	Group 2	Group 3	Group 4

Set Three

Name of the Object	Total Number	Group 1	Group 2	Group 3	Group 4

Give the student four bags or containers of counters.



Set Four

Name of the Object	Total Number	Group 1	Group 2	Group 3	Group 4

Look at these flags. Circle the flags in each set to show four equal groups.

1. 

There are flags in all. One group is flag.

2. 

There are flags in all. One group is flags.

3.  _____

There are flags in all. One group is flags.

4.  _____

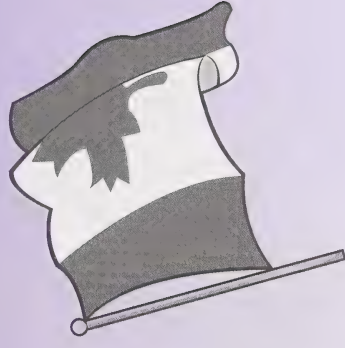
There are flags in all. One group is flags.

5.  _____

There are flags in all. One group is flags.

6.  _____

There are flags in all. One group is flags.



Give the student the cut-out shapes from the Appendix to fold into fourths.



Elicit the response that the four parts are of equal size.

Explain how each part of the paper is one of the four equal parts of the whole. The whole is the whole paper.

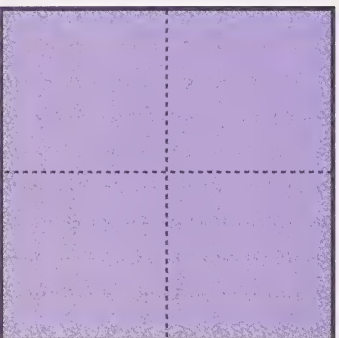
Lesson 3

Your home instructor just gave you a variety of cut-out shapes. Take the square and fold it into fourths.

How do you know you folded it into fourths? Tell your home instructor.

Look carefully at the square you just folded. Are the four parts the same size? Circle  **Yes** or  **No**.

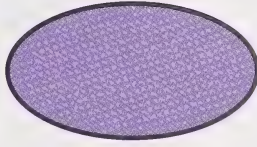
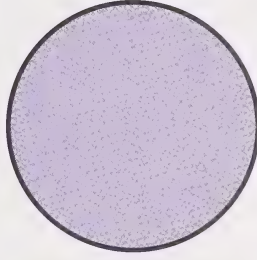
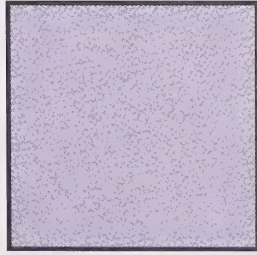
If you said yes, then you have folded the square into fourths!



You divided the paper into four equal parts. Each part is one of the four equal parts of the whole paper.

Take the other shapes that your home instructor gave you, and fold them in half. When you finish, draw a line through each shape to show where you folded it in half.

1. Now take the same shapes you folded into halves and see how many different ways you can fold each one into four equal parts.



2. a. Which shapes were you able to fold into four equal parts more than one way? List them here.

- b. Draw two or three lines to show another way you folded the square into fourths.



The square can be folded twice diagonally. The student should recognize that the four pieces are of equal size.

The student can see that the shapes are folded into fourths because there are four pieces of equal size.

Did you think of folding the square like this?

Circle

Yes

or

No.



Tell your home instructor how you know you folded the shapes into fourths.

3. Draw two or three lines to show the new way you folded the rectangle to show fourths.



Can you think of another way to fold the rectangle into fourths? If you can, tell your home instructor. Then fold the rectangle.

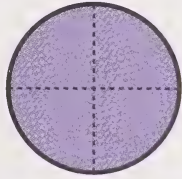
Were you able to fold the oval in a different way to show fourths?

Circle  **Yes** or  **No**.

Tell your home instructor why you couldn't.

Lesson 4

You will look at a number of shapes that have been divided into parts. Then answer questions. Remember the parts must be the same size or they are not fourths.



Look at the circle. Do you think the four parts each

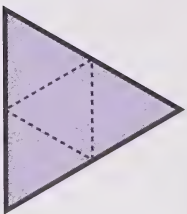
show the same amount? Circle  **Yes** or  **No**.

How can you tell they are equal parts? _____

How much of the circle will you get if you get one part? _____

The student will observe that when you fold the oval in a different way, the four pieces are not of equal size.

For each of the four pictures, elicit the response from the student that the parts are the same size, are equal, or show the same amount. You can tell they are equal because the four pieces are the same size. The student will get one-fourth of each object.



Look at the triangle. Do you think each of the four parts show the same amount?

Circle

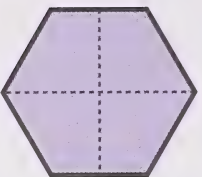
Yes

or

No.

How can you tell they are equal parts? _____

How much of the triangle will you get if you get one part? _____



Look at the hexagon. Do you think each of the four parts show the same amount?

Circle

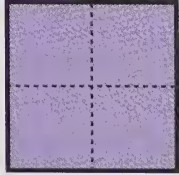
Yes

or

No.

How can you tell they are equal parts? _____

How much of the hexagon will you get if you get one part? _____



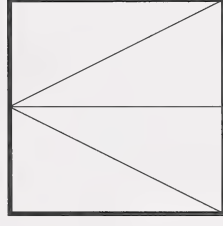
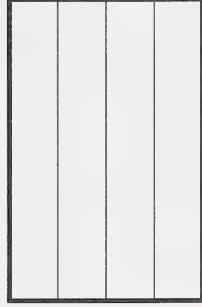
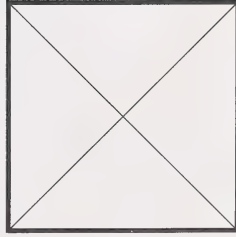
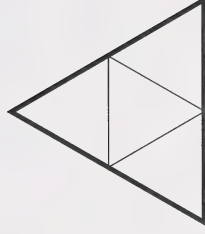
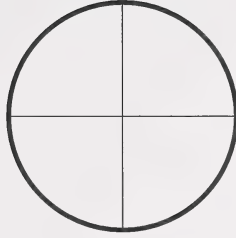
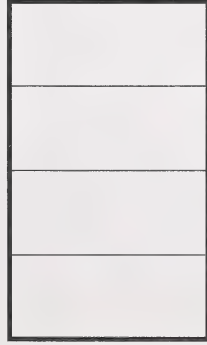
Look at the square. Do you think each of the four parts show the same amount?

Circle **Yes** or **No**.

How can you tell they are equal parts? _____

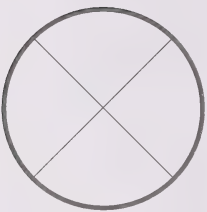
How much of the square will you get if you get one part? _____

1. Colour one-fourth of each object.

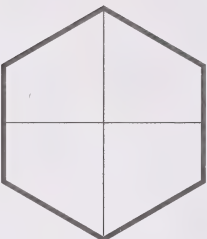


2. Which objects show four equal parts? Circle them.

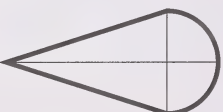
a.



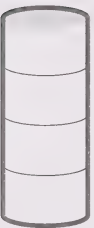
d.



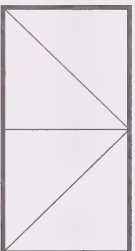
g.



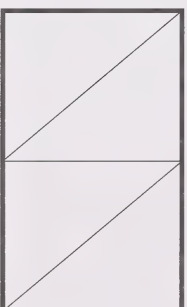
b.



e.



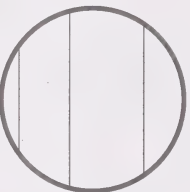
h.



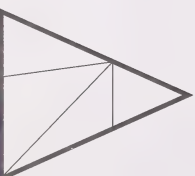
c.



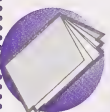
f.



i.



For more practice using fractions, go to the Extension Activities.



Go to Assignment Booklet 9A.

Day 9: Is That One-Fourth?

You will need a good eye today to see if things are really divided equally into fourths.

Elena's Uncle Irwin has four cats. Elena wants to give each cat a fair share of its favourite food. Do you know what food that might be?

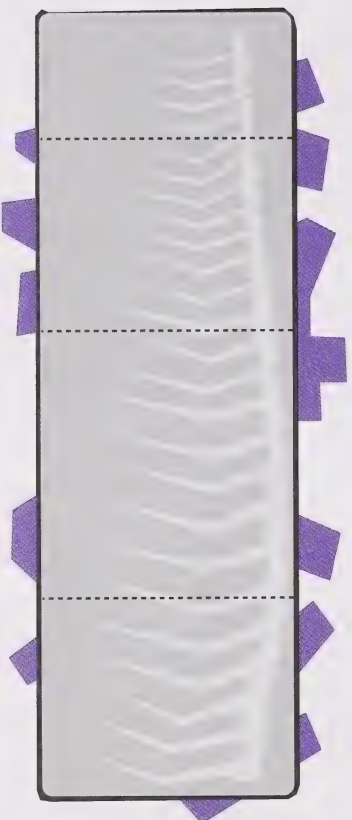
Do you think the cats will know if they each got a fair share of the food?

Let's see if you know if they each got one-fourth of the food.



Lesson 1

Elena went to visit her Uncle Irwin. She likes to visit him because he has four cats, and Elena loves cats. She brought a big jackfish that her mother had caught when she was fishing in Saskatchewan. Elena wanted to give the fish to the cats. When Elena got to her Uncle Irwin's house, he cut up the fish into fillets. Elena cut one of the fillets into fourths. She wanted each cat to have a fair share of the fish. This is how she cut the fish fillet.



Elena's uncle said, "Elena, you didn't cut that fillet into fourths. It's a good thing there's an extra fillet. I'll cut it into fourths for you." Look at Elena's fillet.

Do you think it's cut into fourths? Circle

Yes

or

No.

Why or why not?

When you have one-fourth of something, you have four parts that are the same size. All four parts must be equal to be fourths.

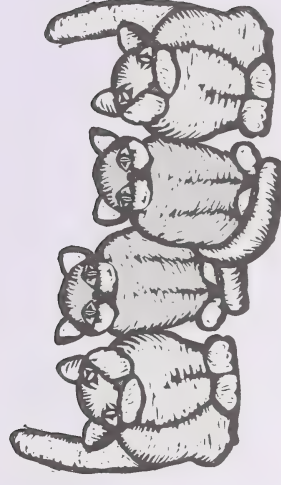
Draw the lines on the fish fillet where Elena should have cut it.



Explain why the lines you drew divide the fish into fourths.

Discuss that the fillet is not cut into fourths because the pieces are not equal.

Have the student draw lines on the fish, and explain why he or she thinks they are fourths. Elicit the observation that the parts are equal and the same size. Then have the student write the same on the lines.



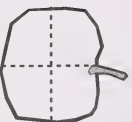
1. Look at the oranges. Colour the orange that is cut into fourths red.



Each piece of the orange you coloured red

shows _____.

2. Look at the apples. Colour the apple that is cut into fourths blue.



Each piece of the apple you coloured blue

shows _____.

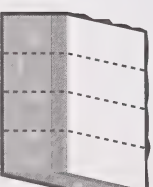
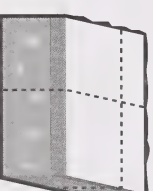
3. Look at the cookies. Colour the cookie that is cut into fourths green.



Each piece of the cookie you coloured green

shows _____.

4. Look at the brownies. Colour the brownie that is cut into fourths black.



Each piece of the brownie you coloured black

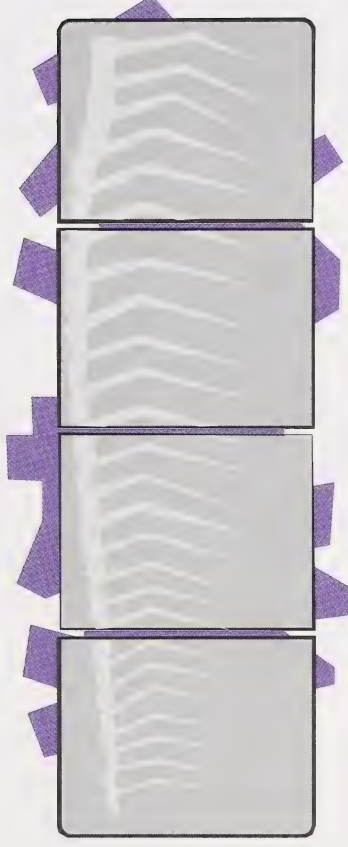
shows _____.

Lesson 2

When something is cut into fourths, there are four parts that are the same amount. The four parts are the same size and are equal. Each part is a fourth of the object, or one-fourth.

This is one way of writing one-fourth: $\frac{1}{4}$. You may have seen this symbol before.

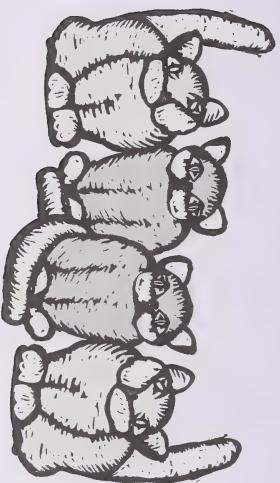
Look at Elena's fish.



How many parts are there?

Yes, there are four parts. That's the number that goes on the bottom. $\frac{1}{4}$

Ensure the student understands that one-fourth of each object is shaded and that the symbol for one-fourth is $\frac{1}{4}$. Have the student print $\frac{1}{4}$ on the lines under the objects.

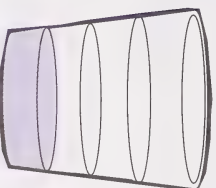


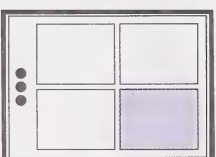
How many parts of the fish did each cat get?

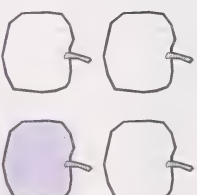
Yes, each cat got one part of the fish, or one-fourth. That's the number that goes on top. $\frac{1}{4}$

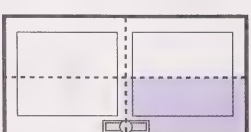
Each cat got one-fourth, or $\frac{1}{4}$, of the fish.

Look at these objects. Each one is cut into fourths. One-fourth, or $\frac{1}{4}$, of each is shaded. Print the symbol that shows one-fourth in the boxes.





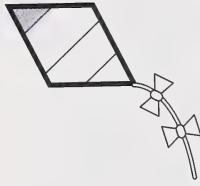




Circle the objects that show one-fourth, or $\frac{1}{4}$.



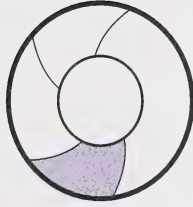
a.



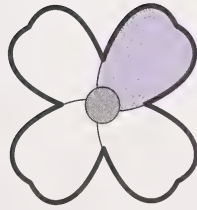
d.



b.



e.



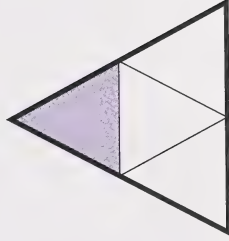
c.



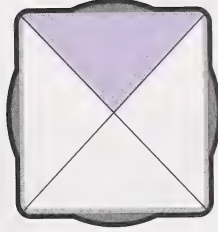
f.



g.



h.

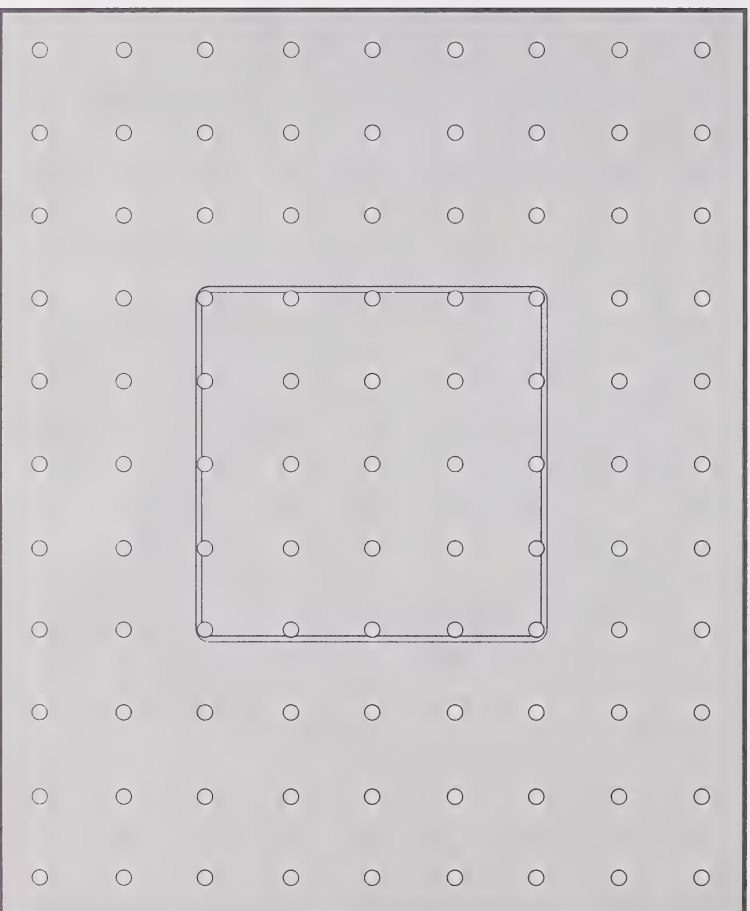


i.

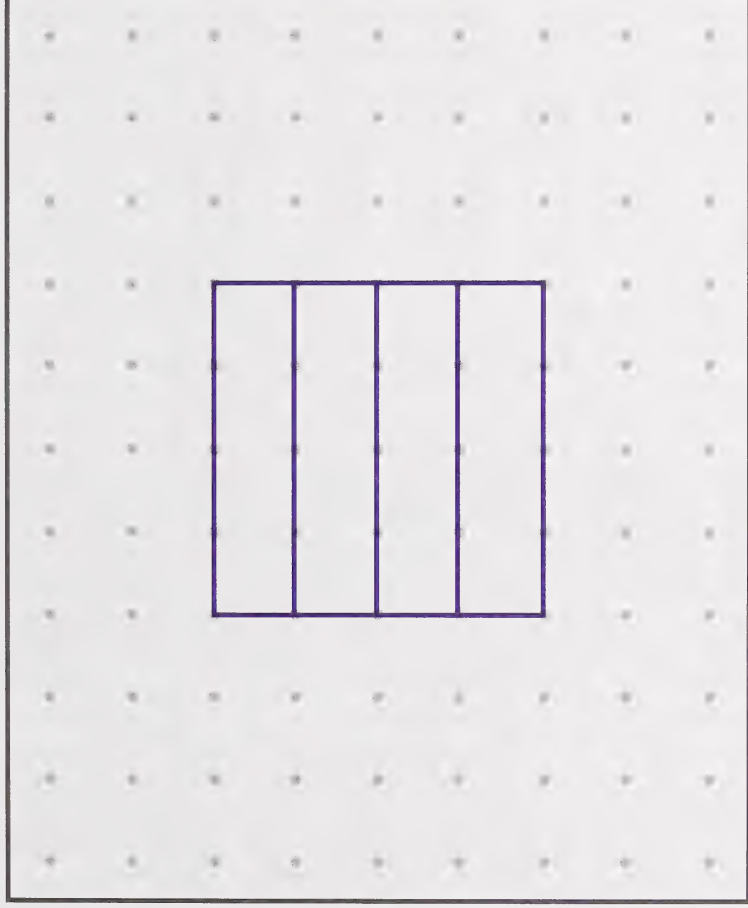
If you circled a, b, c, h and i, you know one-fourth!

Lesson 3

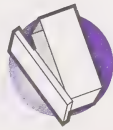
Jasper made a square on his geoboard with an elastic band.



Then Jasper drew the same square on dot paper and drew lines to show fourths.



Jasper continued to make other shapes on the geoboard and divide them into fourths.



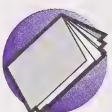
Get your geoboard out of your Math Box.



Get dot paper out of your Student Folder.

Now you'll try what Jasper was doing. Use your geoboard to make shapes with an elastic band. With other elastic bands, divide the shape into fourths as many ways as you can. When you finish, draw the shape and lines through it on the dot paper. Make a square and a rectangle. Experiment with other shapes as well.

Look around you. How many objects do you see that can be divided into fourths? Draw four of them on this page. Then draw lines to divide them in fourths. Colour one-fourth of each object.

A large, empty rectangular box with a thin black border, intended for students to draw objects and their divisions.

Go to Assignment Booklet 9A.

Day 10: Sharing Fourths



You should now be ready to solve even more problems with fourths. Your first job today is to help Jasper's parents organize a barbecue for some of their neighbours.

That's only the beginning. Be ready to work with a whole, halves, thirds, and fourths. At the end of today, you will match fractions to pictures.

Away you go with the barbecue problem.

Lesson 1

Jasper's parents were organizing a neighbourhood barbecue. They were planning to have 24 people in all. They asked Jasper and Elena to figure out how much pop to buy. Jasper's parents told them that each person could drink one-fourth of a bottle.



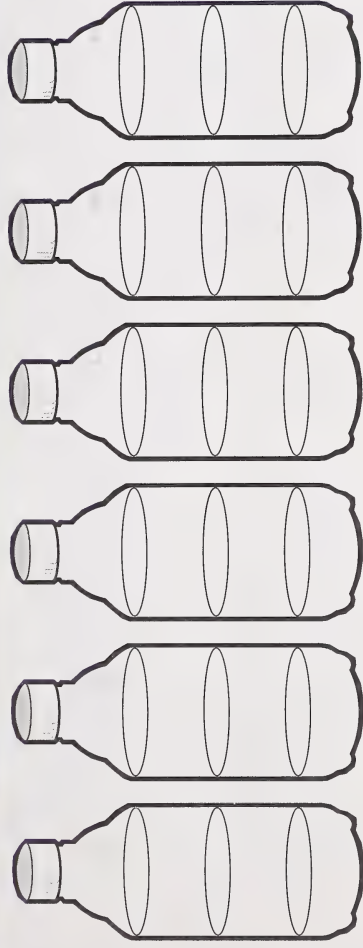
If each person drinks one-fourth of a bottle of pop and there are 24 people, how many bottles of pop do they need to buy?

Think about how you will solve this problem. Talk about it with your home instructor.

How many bottles of pop do Jasper's parents have to buy?

How did you solve your problem?

Jasper and Elena drew a diagram to help them solve the problem. They knew there was one bottle of pop for every four people. They drew bottles and divided them into fourths. Each fourth represented one person. They kept drawing bottles until they counted out 24 fourths.



Did you say Jasper's parents had to buy six bottles of pop? You were right if you did!

You can use manipulatives or you can draw a picture to help you solve a problem. You can even act it out. Now try solving these problems.

1. How many bottles of pop would they need for 20 people if each

one got one-fourth of a bottle?

2. How many bottles of pop would they need for 16 people if each

one got one-fourth of a bottle?

Assist the student with the problems as needed.

3. How many bottles of pop would they need for 8 people if each one got one-fourth of a bottle?

4. How many bottles of pop would they need for 32 people if each one got one-fourth of a bottle?

5. How many bottles of pop would they need for 12 people if each one got one-fourth of a bottle?

Lesson 2

1. a. What does this rectangle show? _____

b. What fraction does the shaded part show? _____

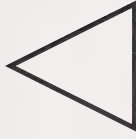




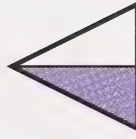
c. What does this circle show? _____



d. What fraction does the shaded part show? _____



e. What does this triangle show? _____

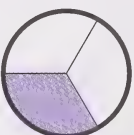


f. What fraction does the shaded part show? _____

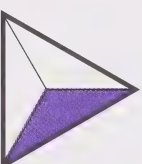
g. What fraction does the shaded part show? _____



h. What fraction does the shaded part show? _____



i. What fraction does the shaded part show? _____

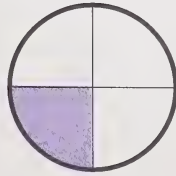


You know $\frac{1}{4}$ is a fraction that means one-fourth of something.

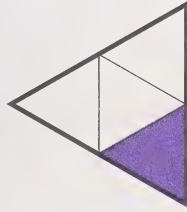
The shaded part of this rectangle shows one-fourth.



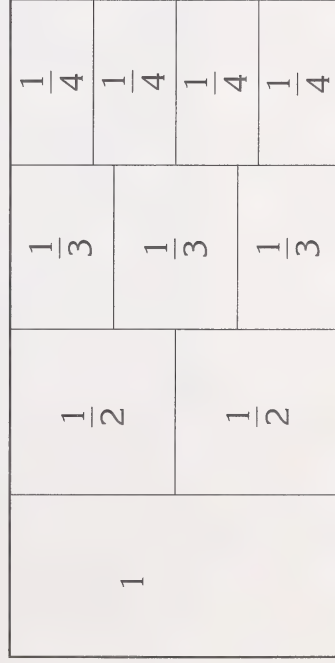
The shaded part of this circle shows one-fourth.



The shaded part of this triangle shows one-fourth.



This chart shows a whole, halves, thirds, and fourths.



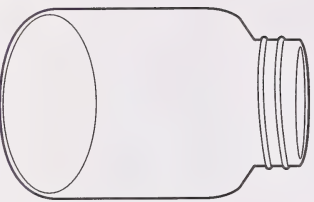
2. Fill in this chart to show a whole, halves, thirds, and fourths.



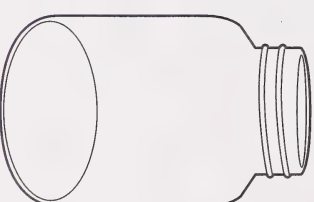
4. Fill this jar half full of marbles. Write one-half beside it.



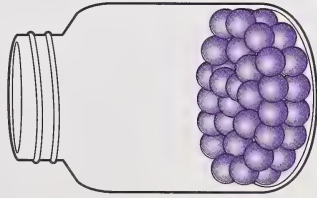
3. Fill this jar full of marbles. Write whole beside it.



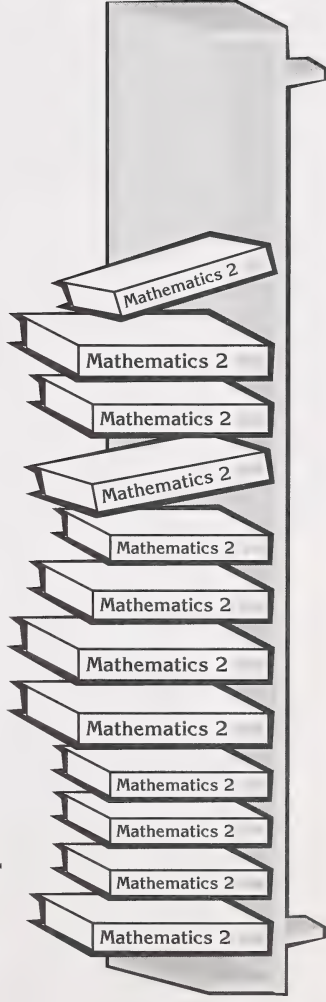
5. Fill this jar one-third full of marbles. Write one-third beside it.



6. This jar of marbles is one-fourth full. Write one-fourth beside it.



8. Colour $\frac{1}{4}$ of the books green.



7. Colour this glass so it shows that it is one-fourth full of tomatoe juice.



9. Match the fractions to the pictures. There are two pictures for each fraction.



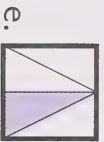
$$\frac{1}{2}$$



$$\frac{1}{3}$$



$$\frac{1}{3}$$



$$\frac{1}{4}$$



For more practice with fractions, go to the Extension Activities.

Go to Assignment Booklet 9B.

Day 11: Directions

Has a friend ever asked you where you live? Were you able to give him or her directions to your house?

Giving clear directions is harder than it seems.

Today you will begin to work with giving clear directions. You will also get to follow directions.

Which do you think will be easier to do, giving directions or following directions?



Lesson 1

Jasper was talking to Elena on the telephone. He told her about the great pattern he had made with pattern blocks. He tried to describe it to her. Elena thought it would be a good idea if Jasper gave her directions how to make it. Then she could see what it looked like!



This is how Jasper described his design.

- Place three rectangles on the bottom row.
- Put two triangles on top of them.
- Put a circle on top of the triangles.
- Put two triangles on top of the circle.
- Put three rectangles on top of the triangles.



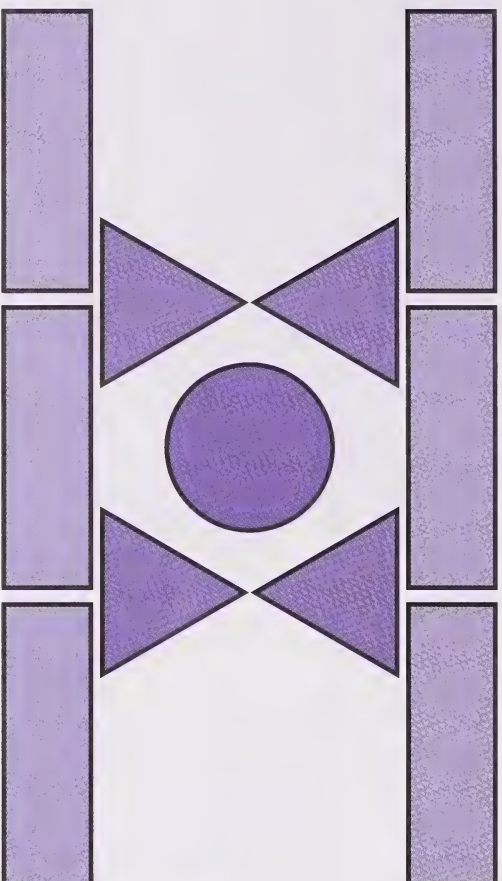
Take your pattern blocks out of your Math Box, or use the paper ones from Module 4 in your Student Folder.

Try to make the design Jasper made by following his directions. After you make the design, draw it in the box.

A large, empty rectangular box with a thin black border, intended for the student to draw the design they have created.

Have the student make the design following Jasper's directions. Do not let the student look ahead to see what the design is supposed to look like.

This is Jasper's design.



Compare the design you made to Jasper's design. Does it look the same? Circle

Yes

or

No.

Tell your home instructor why it may not look the same.

Did you find Jasper's directions helpful? Circle

Yes

or

No.

Think how Jasper could have given the directions. Discuss with your home instructor how you think Jasper's directions could have been better. Go over each direction he gave, and say how it should have read.



Now it's your turn to think of a design using pattern blocks. Use no more than ten blocks. Experiment with different designs until you come up with one you really like. When you have made your design, print the directions for it on the lines. Use as few directions as possible. Have your home instructor make the design you made by following your directions. Make sure your home instructor doesn't see your design first. Make it behind a screen or in another room.

Elicit the point that the student's design does not look the same because the directions were not clear enough. Discuss how Jasper should have given more detailed directions as to the exact placement of the blocks.





Compare the design you made to the original. If there are mistakes, discuss what they are with the student and revise the directions so they are clearer. Talk about giving directions.

Did your home instructor make your design just the way you did?

Circle  or .

Did your home instructor find it easy to follow your directions?

Circle  or .

If not, go back to your directions, and redo the ones that need to be made clearer.

Are you good at giving directions? Circle  or .

Lesson 2





Take the manipulatives out of your Math Box.

Your home instructor will give you directions to make a design using manipulatives. See how well you follow directions. Listen carefully to what your home instructor says.

Set up a screen between you and the student. Give the student oral directions to reproduce the design. Give a direction and allow the student to follow it. Then give the other directions, one at a time, until the design is complete.

After you make the design according to your Home Instructor's directions, draw it in the box.

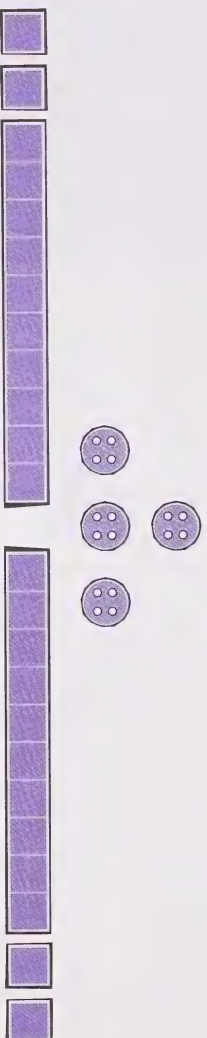
Is the design you made the same one your home instructor made?

Circle  or .

Are you good at following directions? Circle  or .

Compare the design the student made to the original. If there are mistakes, discuss what they are and revise the directions so they are clearer. Talk about taking and following directions.

It's your turn to make a design with the manipulatives. Use ten or fewer. See the example below. After you make the design, think about how you can give clear directions to your home instructor. Do not let your home instructor see your design until he or she has copied it. Put up the screen between you and your home instructor. Give the directions from behind the screen. Give one direction at a time for your home instructor to follow.



Did your home instructor make your design just the way you did?

Circle

Yes

or

No.

Did your home instructor find it easy to follow your directions?

Circle

Yes


or

No.

If not, think about the directions you gave and how they could be clearer.

.....

Are you getting better at giving directions?

Circle  **Yes**

or

 **No**.



For more practice with directions, go to the **Extension Activities**.



Go to Assignment Booklet 9B.



Compare the design you made to the original. If there are mistakes, discuss what they are with the student and revise the directions so they are clearer. Talk about giving directions.

Day 12: Geoboard Directions

Elena thought making geoboard shapes would be fun. She decided to try giving her friend directions for making a shape.

Do you think you could do that? You will have a chance to give your home instructor directions to make a shape. Then you will talk about your directions to make them even better.

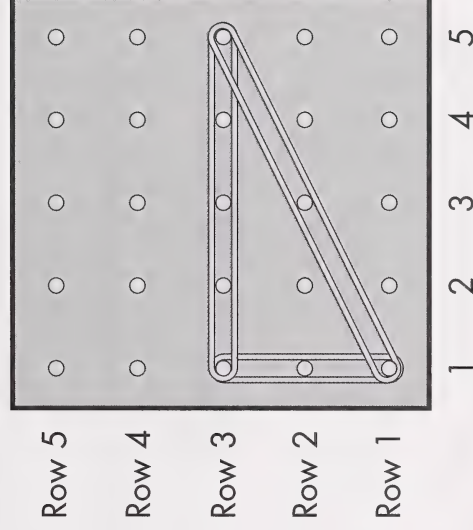
First, see what Elena did.



Lesson 1

Elena really enjoyed hearing about Jasper's design over the telephone. She followed his directions to make it. She wanted to make her own designs and write the directions for her friends and family to copy. "Making shapes on the geoboard will be fun," she thought. "Then I can write directions for someone else to copy the shapes."

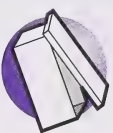
This is the shape Elena made.



These are the directions Elena gave Ping.

- Use one elastic to connect the first peg in the first row to the first peg in the third row.
- Use another elastic to join the first and fifth pegs in the third row.
- Use the last elastic to connect the first peg in the first row to the fifth peg in the third row.

Have the student follow the directions and make the shape.



Take your geoboard and elastic bands out of your Math Box.

Follow these directions yourself, and see if you can make the shape Elena did.

What shape did you make?

Is it the same size and in the same place as Elena's?

Circle

Yes

or

No.

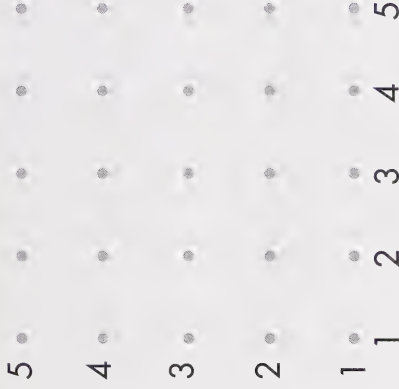
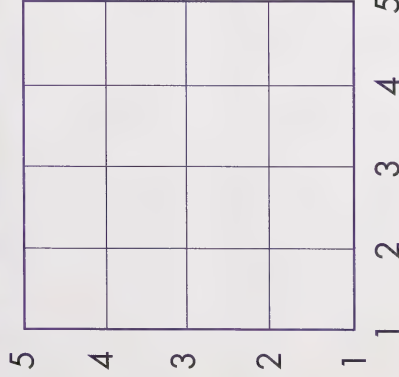
If you said a triangle, you were right. If your triangle is the same size and in the same place as Elena's, you did very well.



Take the grids for Day 12 out of your Student Folder.

Do you know what a **grid** is? It's an arrangement of numbered squares or dots. Look at the two examples of grids. You will be using a grid with dots.

Explain to the student that a grid is an arrangement of numbered squares or dots.



It's your turn to make a shape on your geoboard. Make any shape you want. Don't forget to set up a screen between you and your home instructor. Your home instructor will copy your shape on a grid by following your directions.



Print the directions for making your shape.

Make a copy of the shape on dot paper following the student's directions.


Compare the design you made to the original. Discuss whether or not the student's directions were easy to follow. Discuss how to make them clearer if they weren't.

Compare your shape with your home instructor's.

Did your home instructor make the shape the same size and in the same place as you did?

Circle  or .

Did your home instructor find it easy to follow your directions?

Circle  or .


If not, go back to your directions and redo the ones that need to be made clearer.

Lesson 2

You just wrote directions and followed written directions. Now you will listen to directions and make a shape.

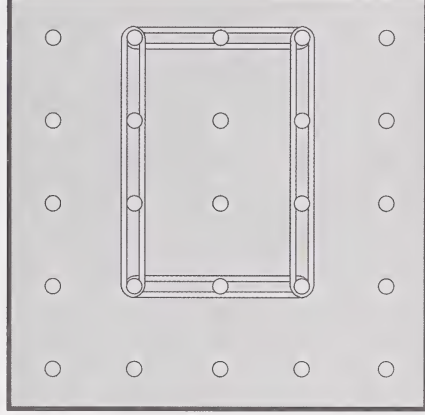
Your home instructor will make a shape on the geoboard and then give you directions out loud to draw the same shape on your grid.

Is the shape you made the same one your home instructor made?

Circle  **Yes** or  **No**.

It's your turn to make a shape on the geoboard.

After you make the shape, think about how you can give the directions to your home instructor so they are clear. Do not let your home instructor see your shape until he or she has copied it. Put up the screen between you and your home instructor. Give the directions behind the screen. Give one direction at a time for your home instructor to follow.





Set up a screen between you and the student. Make a shape on the geoboard. Give the student oral directions to reproduce the shape. Give a direction and allow the student to follow it. Then give the other directions, one at a time, until the shape is complete.



Compare the shape the student made to the original. If there are mistakes, discuss what they are and revise the directions so they are clearer. Talk about giving and following directions.

Compare the shape you made to the original. If there are mistakes, discuss what they are with the student and revise the directions so they are clearer.

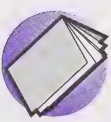
Did your home instructor make the shape the same size and in the same place as you did?

Circle  or .

Did your home instructor find it easy to follow your directions?

Circle  or .

If not, think about the directions you made and how they could be clearer.



Go to Assignment Booklet 9B.

Day 13: On the Right Path

You already know that a geoboard is like a grid. You have practised giving directions to make a shape on a grid or a geoboard.

Jasper thinks he could use a grid to give directions for following a path between two points.

Do you think that would work?

How would you do that?



Lesson 1

Jasper's father was on the telephone giving someone directions to their house. Jasper heard his father say, "Turn left at the lights, and drive five blocks until you get to the stop sign. Then turn right, and drive for two blocks. Our house is the third one on the west side of the street."



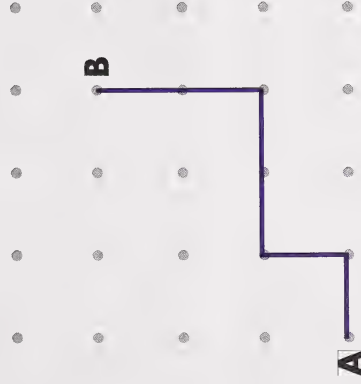
Jasper thought it would be an adventure to give Elena directions on how to get from one place to another. Elena thought that would be a challenge too. She suggested they try it first on a grid.



Take the remaining grids out of your Student Folder.

Elena gave Jasper a grid and told him to draw a path between points A and B. She put up a screen between them so she couldn't see the path he drew.

This is the path Jasper drew.



Jasper then wrote the directions to follow his path. Read his directions out loud to your home instructor. As you read Jasper's directions, make the path with a pencil on the grid. Decide if his directions were clear.

- Move from point A one step to the right.
- Move up one step.
- Move to the right two steps.
- Move up two steps.

Have the student follow the path on the grid with a pencil tip.

Discuss how Jasper's directions were clear and easy to follow.

Were Jasper's directions clear and easy to follow?

Circle

Yes

or

No.

Lesson 2

Elena was impressed with Jasper's directions. They were clear and easy to follow. She noticed something else. Jasper's path wasn't the only way to get from A to B. She saw many other possible paths to follow.

Study the grid. How many different paths can you see between points A and B? Think of four new paths. Move sideways and up and down only. Describe each path to your home instructor.



Have the student think of different paths to get from A to B and describe each one the same way Jasper did.

- Move from point A up four steps.
- Move one step right.
- Move two steps down.
- Move three steps right.
- Move one step up.
- Move one step left.

or

On this grid, find paths between points A and B. Describe to your home instructor four paths you can take. Print the directions to a fifth path on the lines. Have your home instructor read your directions, and draw your path on a grid.

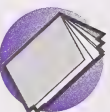
[illegible]

You decide where to place points A and B on the grid. Describe to your home instructor ten different paths to take. Print directions for one of the paths on the lines. Ask a friend or family member to draw the path on a grid following your directions.





For more practice giving and following directions, go to the Extension Activities.



Go to Assignment Booklet 9B.

Day 14: Matching Sides

Just like Jasper and Elena, you already know lots about shapes. You have a good eye for seeing if shapes are equal. You are ready to try some new things with shapes.

Today you will learn how to describe shapes with matching sides. You will have to look carefully and think about the shapes you see.

You will even learn some tricks about making shapes with matching sides.





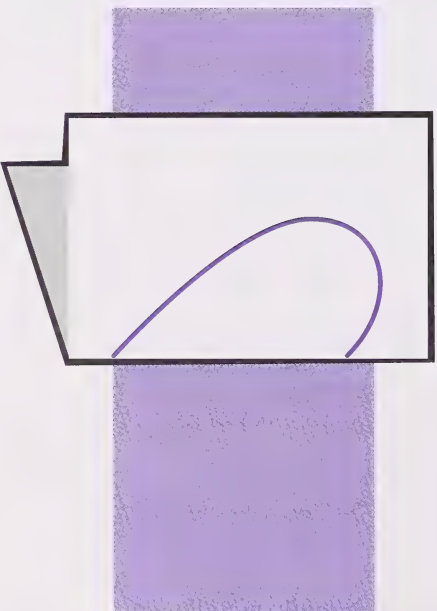
Fold a sheet of paper in half, and draw half a heart on it just like the drawing shows. Then cut the half heart out.



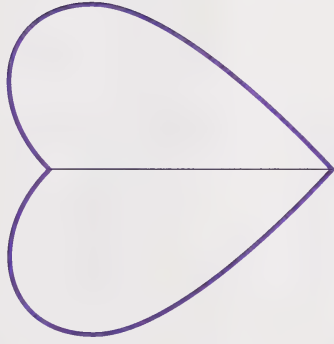
Lesson 1

Jasper was trying to cut a perfect heart shape. His mother's birthday was coming soon, and he wanted to make her a special card with a heart on it. He kept trying and trying but just couldn't get it right. He asked Elena to help him, but she wasn't sure how to do it either. They asked their home instructor for help.

Jasper and Elena's home instructor folded a sheet of paper in half, drew half a heart on it, then cut it out. Your home instructor will do the same thing. Watch what happens next.



This is what Jasper and Elena saw.



Open the folded paper to reveal a whole heart.

What did you see when your home instructor unfolded the paper?

You probably saw a perfectly shaped heart.

Do you think that both sides of the heart are the same?

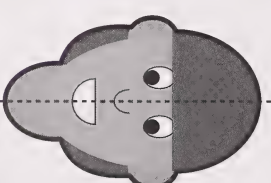
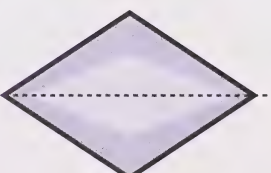
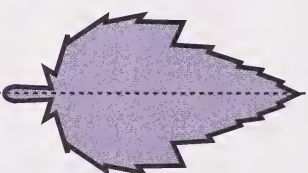
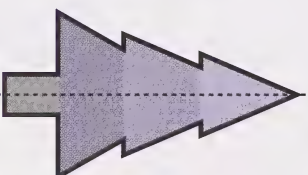
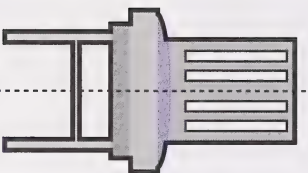
Circle  **Yes** or  **No**.

Explain that folding the heart would prove that one side is exactly the same as the other side.

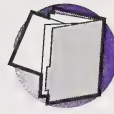
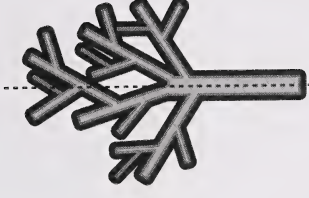
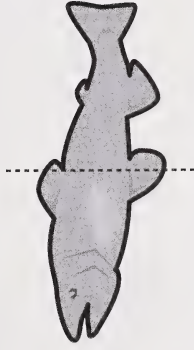
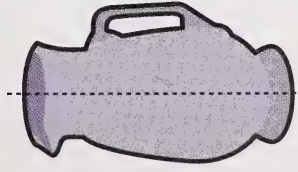
Tell your home instructor how you think you could prove that the two sides are the same.

When both sides of an object are exactly the same, and you can prove it by folding along a line, it's called **symmetrical**.

These objects are symmetrical because both sides are exactly the same.

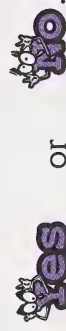


These objects are not symmetrical. Their two sides are not exactly the same.



Take a few sheets of paper out of your Student Folder.

Fold one sheet of paper in half. Draw and cut out a shape along the folded edge. It can be a tree, a flower, a butterfly, a geometric shape, or anything you like.



Open the paper. Are the two sides exactly alike? Circle **Yes** or **No**.

How can you find out if they are symmetrical?

If you said you could tell if they are symmetrical by folding along the line, you are right.

Symmetrical objects have two sides that are exactly the same.

If an object is divided exactly in half and the two halves are exactly the same in size and shape, it is symmetrical.

Lesson 2

Take another sheet of paper and fold it in half. Draw a shape along the fold and then cut it out.

What did you cut out? _____

You may have noticed a line in the middle of your shape. There is a mathematical name for that line. It is called the line of symmetry.

The line of symmetry divides an object into two matching parts.

Find the lines of symmetry in the two shapes you folded.

Can you see how the fold divides the shape into two exact sides? Circle



or



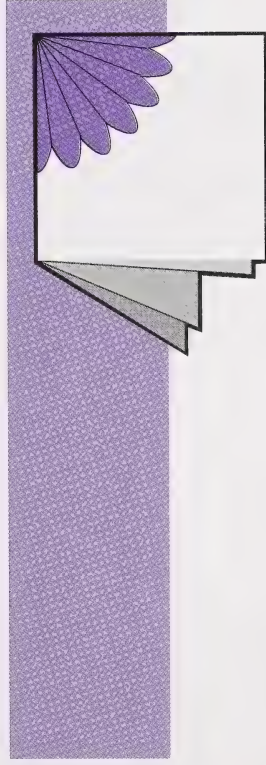
Lesson 3

You have made symmetrical shapes with one line of symmetry.

Do you think you can make a shape that has two lines of symmetry?

Circle **Yes** or **No**. Try it.

Fold a sheet of paper in half. Then fold the paper in half again. The paper is now folded into fourths. Draw a flower on it like this. Make sure you draw the flower on the folded corner like the drawing shows.

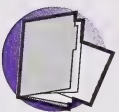


Cut the flower out, and open the paper.

Do you see the two lines of symmetry? Make two more shapes that have two lines of symmetry. You may have to practise a few times with the cutting. Keep trying and you'll get it.

Assist the student if necessary with folding and cutting.

Lesson 4



Take the symmetrical and non-symmetrical shapes page out of your Student Folder.

Cut out the shapes from the page. Find out which shapes are symmetrical. How will you find that out?

If you said you could find out which shapes are symmetrical by folding them in half, you are right. When you fold a shape in half and both sides match, then it is symmetrical.



Use a sheet of paper from your Student Folder. Fold the paper in half to make two columns. At the top of the first column print the title "Symmetrical." At the top of the second column print "Not Symmetrical."

Glue the shapes that are symmetrical on the side of the chart that says "Symmetrical." Glue the shapes that are not symmetrical on the side of the chart that says "Not Symmetrical." Put the chart up in your work area.

Symmetrical	Not Symmetrical



Go to Assignment Booklet 9B.

Day 15: Mirror Magic



Now you are ready for some magic, and all you need is a mirror and a miraboard.

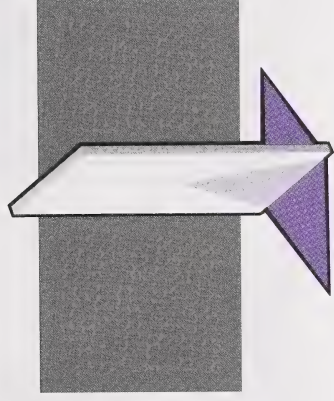
And you thought mirrors were just for checking if you were having a bad hair day!

Mirrors are wonderful for finding the line of symmetry in objects.

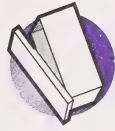
Turn the page and see how it all works. Then you can try it yourself.

Lesson 1

Elena and Jasper's home instructor gave them each a mirror. They wondered what the mirrors were for. Their home instructor told them to put their mirrors on a shape to see what happened. Elena and Jasper experimented with their mirrors.



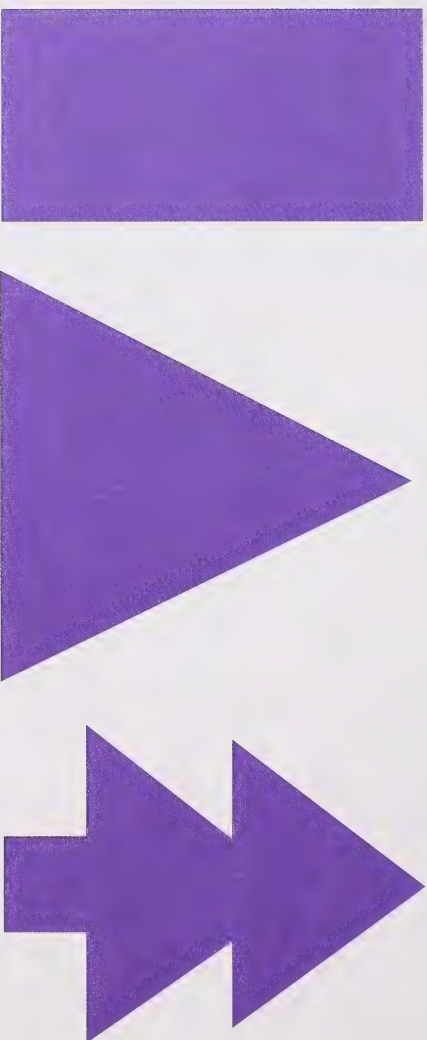
They soon discovered that by placing the mirror on a shape, they could find the **line of symmetry** with it. Elena said she first imagines the line down the middle of the shape, then places her mirror along her imagined line. She then looks into the mirror and moves the mirror until the two sides are exactly the same. One-half of the shape is on the paper, and the other half is reflected in the mirror.



Take your mirror out of your Math Box.

Have the student experiment finding the lines of symmetry in the shapes.

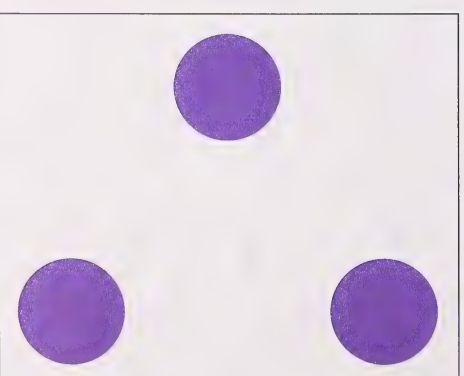
Where do you place the mirror on each of these shapes to show the lines of symmetry? Experiment with your mirror.



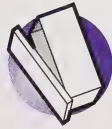
Be sure you have read the instructions in the HIG explaining how to use the mirror with the dots. Assist the student in placing the mirror sideways, diagonally, or up and down.

Can you find more than one way of finding a symmetrical shape? Talk about it with your home instructor, and experiment some more with your mirror.

Use your mirror on the circles. Experiment placing it in different ways. Where would you place the mirror to show one circle? two circles? three circles? four circles? six circles? Show your home instructor.



Lesson 2



Take your miraboard out of your Math Box.

Elena and Jasper loved using their miraboard. They called it a “magic” board. They would spend hours drawing symmetrical pictures with it. You can have fun with your miraboard too.

To use the miraboard, place it on the line that is beside the half shape. Trace the image that appears on the other side of the miraboard. When you remove the miraboard, you will have a symmetrical shape. The line now becomes the line of symmetry.

Use your miraboard to complete the shape.



Help the student use the miraboard.

What is the shape? _____

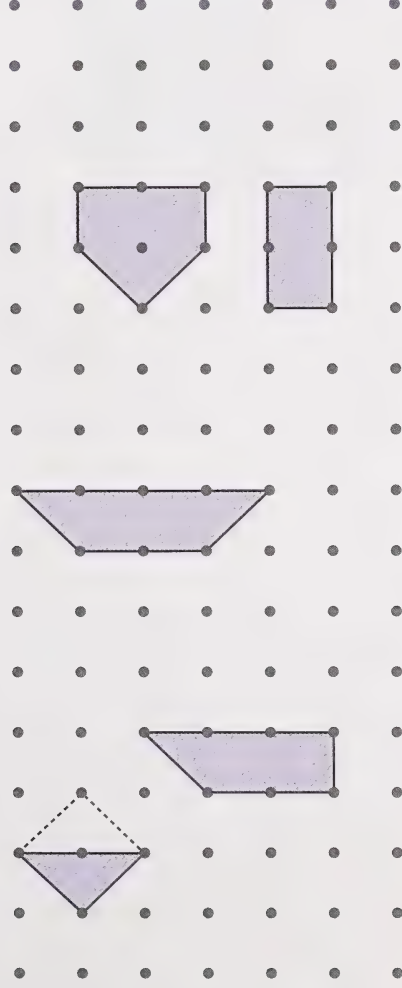
Yes, it is a heart. Why do you think the line in the middle of the heart is the line of symmetry?

The line in the middle of the heart is the line of symmetry because it divides the shape into two matching parts.

Use your miraboard to finish drawing the symmetrical shapes.



You won't need your miraboard to finish these symmetrical shapes. Can you see how you will draw them? Tell your home instructor. The first one is done for you.



Lesson 3

Jasper and Elena were having a lot of fun making symmetrical shapes with their miraboard and mirror. They started looking for shapes all around them. They found symmetrical shapes in their homes and outside too. They used their mirrors to find the lines of symmetry in leaves, flowers, some of their toys, and household objects.

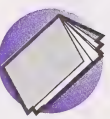
Discuss with the student how he or she can count the number of dots shaded in and then draw the same shape on the other side of the line.

Symmetrical Objects

Walk around your home. Then go outside to find objects that are symmetrical. Use your mirror to find their lines of symmetry. Make a list in the chart of the things you found that are symmetrical.



For more practice creating symmetrical 2-D shapes, go to the Extension Activities.



Go to Assignment Booklet 9B.

Day 16: What Do I Know Now?

Module 9 is the last module of Grade Two Mathematics. You have learned many new things. It's time to stop and think about all of the mathematical skills you have developed.



First, you will review what you learned in Module 9. Fractions were your first challenge. Then you had fun giving and following directions. Last of all, you sampled symmetry.

These will be easy to remember. What do you think?

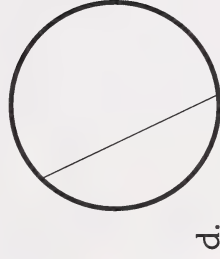
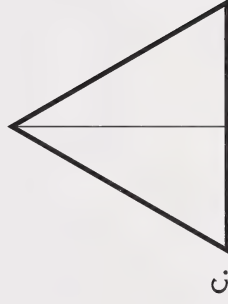
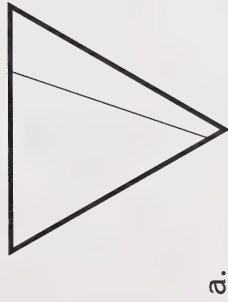


This is a review of what you learned in this module. See how much you remember.

1. Count, then draw a circle around one-half of the items in each box. Print the numbers in the boxes.

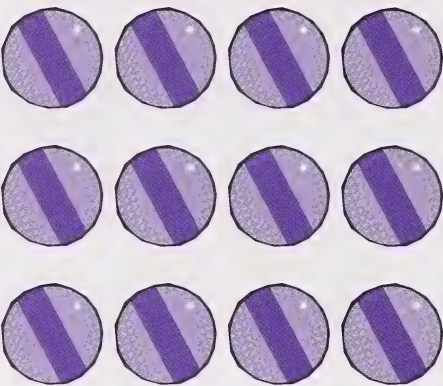
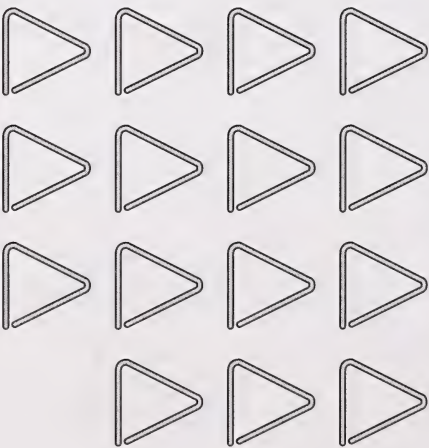
<p>a.</p>  <p>There are <input type="text"/> hearts in all.</p> <p>One-half is <input type="text"/> hearts.</p>	<p>b.</p>  <p>There are <input type="text"/> stars in all.</p> <p>One-half is <input type="text"/> stars.</p>
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2. Which pictures show halves? Circle them and colour $\frac{1}{2}$ (one-half) of each one.

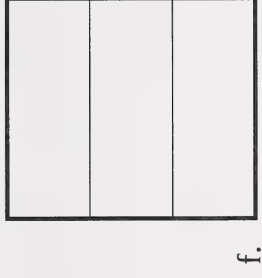
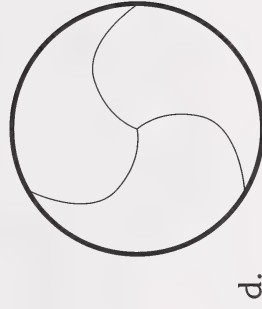
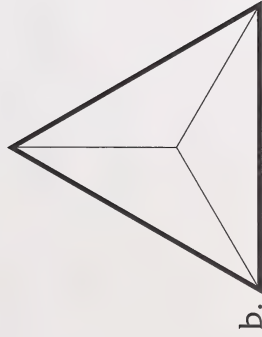
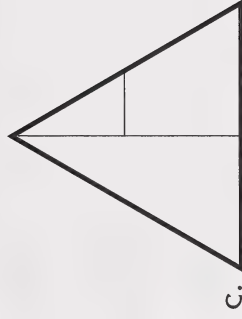
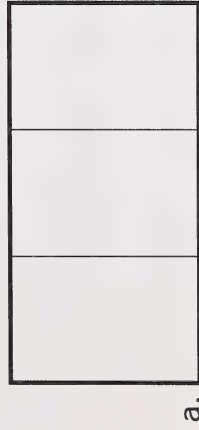


3. Explain why the shapes you circled show halves.

4. Count, then draw a circle around one-third of the items in each box. Print the numbers in the boxes.

<p>a.</p>  <p>There are <input type="text"/> balls in all.</p> <p>One-third is <input type="text"/> balls.</p>	<p>b.</p>  <p>There are <input type="text"/> triangles in all.</p> <p>One-third is <input type="text"/> triangles.</p>
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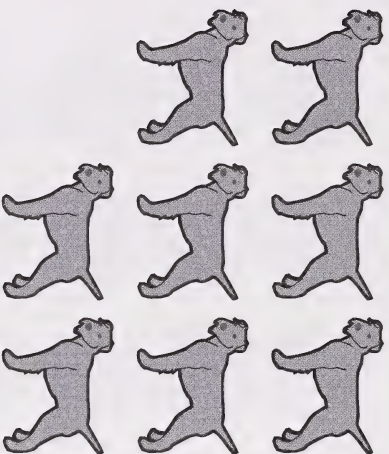
5. Which pictures show thirds? Circle them and colour $\frac{1}{3}$ (one-third) of each one.



6. Explain why the shapes you circled show thirds.

7. Count, then draw a circle around one-fourth of the items in each box. Print the numbers in the boxes.

a.



There are

dogs in all.

One-fourth is

dogs.

b.



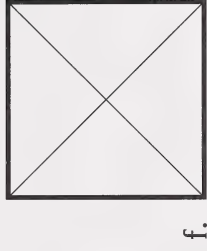
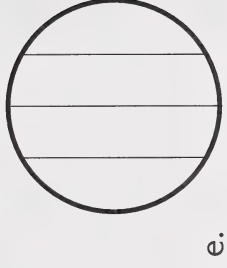
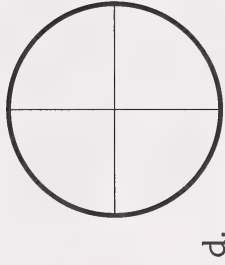
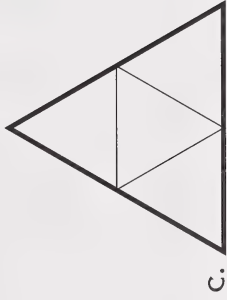
There are

cars in all.

One-fourth is



cars.

8. Which pictures show fourths? Circle them and colour $\frac{1}{4}$ (one-fourth) of each one.

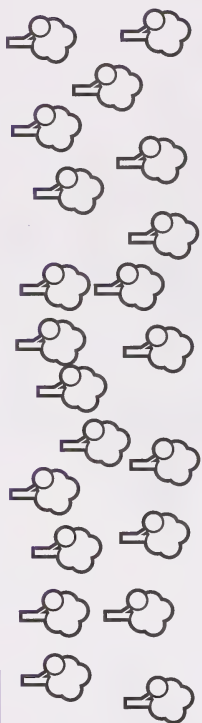
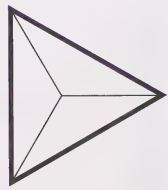


9. Explain why the shapes you circled show fourths.

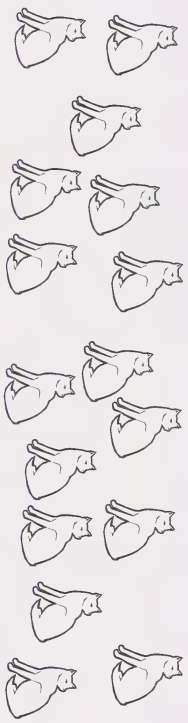
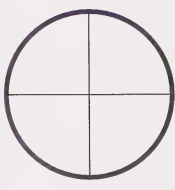
10. a. Colour one-half in each box.

	
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






b. Colour one-third in each box.

	
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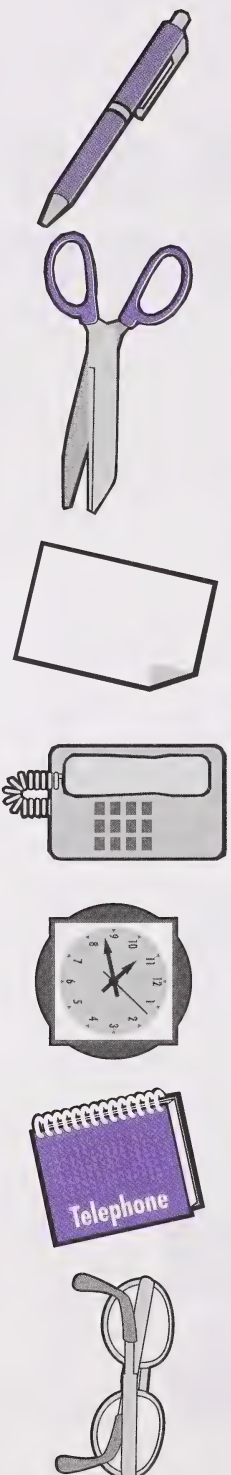
c. Colour one-fourth in each box.

	
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11. How much is shaded in each box? Circle the correct fraction.

<p>a.</p> <div>     </div> <div> $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ </div>	<p>b.</p> <div>     </div> <div> $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ </div>	<p>c.</p> <div>     </div> <div> $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ </div>
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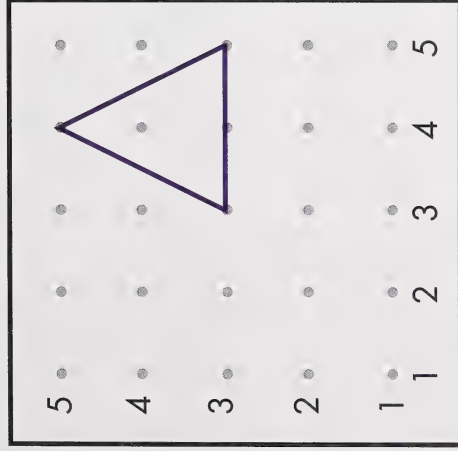
12. Here are seven shapes that you will rearrange by following the directions. They tell you where to place the objects in a row. Draw the seven shapes in the correct order in the boxes below.



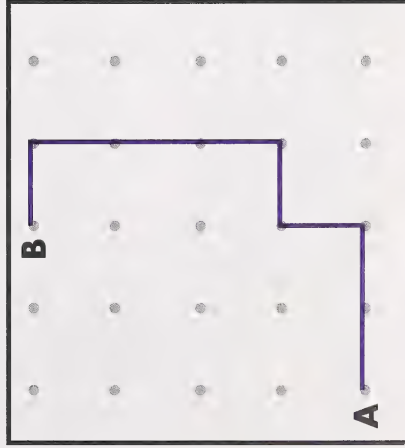
- The clock is in the middle of the row.
- The scissors are first in the row.
- The book is last in the row.
- The telephone is next to the scissors.
- The paper is next to the book.
- The glasses are next to the telephone.
- The pen is next to the paper.

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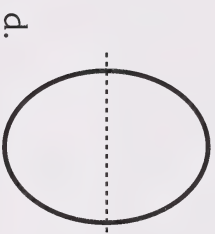
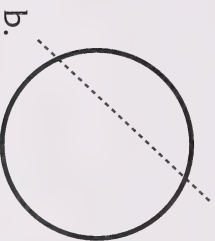
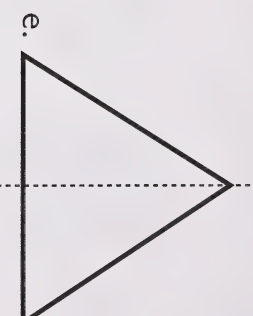
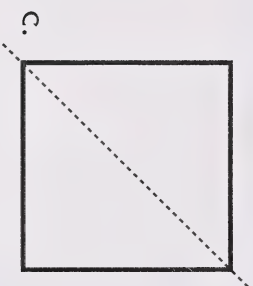
13. Look at the shape on the dot paper. Print clear directions to make this shape.



14. Look at the path between points A and B. Print directions for the path on the lines.



15. Look at these shapes. Colour the ones that have lines of symmetry.



16. Finish these drawings to make symmetrical shapes. You may use a miraboard to help you.



Day 17: I Know Grade Two Math



Today you will go way back to Modules 1, 2, and 3. It has been a long time since you worked on those modules. What can you remember about them?

Do you remember all the work you did with numbers?

Some words that should come to mind are less and greater, even and odd, estimates and actual, and add and subtract. There's problem solving too! That's a lot to remember!

Let's see how you do.

Lesson 1

This is a review of Modules 1, 2, and 3. This is a chance to see how well you remember what you learned.

1. Write the missing numbers.

a. 18, , , , , 23

b. 77, , , , , 82, ,

2. a. Write the numbers in order, from smallest to largest.

62, 41, 87, 19

, , ,

b. Write the numbers in order, from largest to smallest.

30, 92, 76, 85, 29

, , , ,

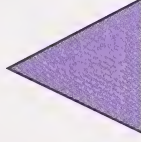
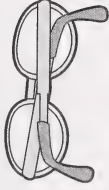
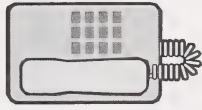
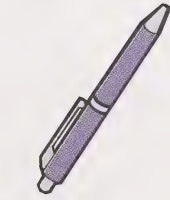
3. a. Circle the number in each box that is greater.

15	29	59	45	28	18	7	10
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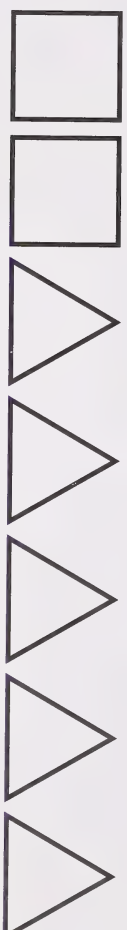
- b. Circle the number in each box that is less.

63	46	97	82	36	37	41	39
----	----	----	----	----	----	----	----

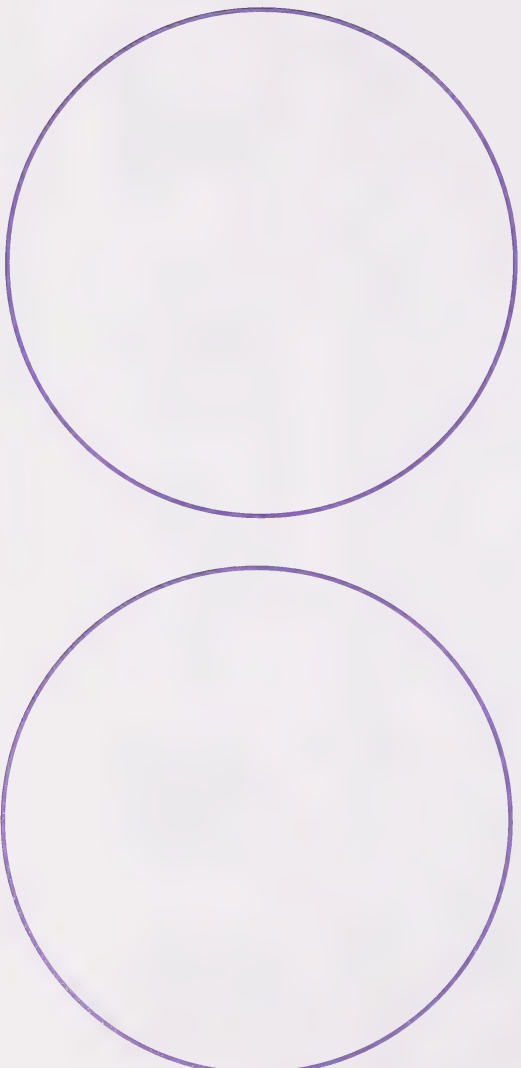
4. Look at the objects lined up here. The pen is first. Put an X on the object that is third. Circle the fifth object. Put a Z on the fourth object. Put a B on the object between the fifth and seventh objects.



5. Colour one square blue. Colour one square purple. Colour two triangles blue. Colour three triangles purple.



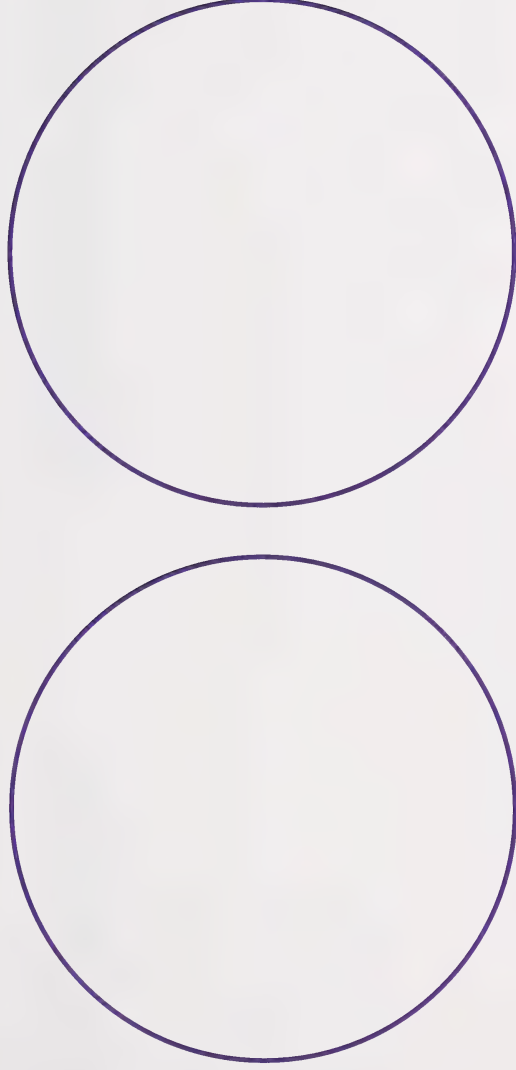
- a. Sort the shapes.



- b. Now print what your sorting rule is. My sorting rule is _____



c. Now resort the shapes.



d. Print your new sorting rule. My new sorting rule is _____.

6. a. Count backward by fives. 85,

--	--	--	--	--	--	--	--

, 60

b. Count backward by tens. 60,

--	--	--	--	--	--	--	--

7. Draw rods and cubes to show the number 85.



8. Make four number sentences (two addition ones and two subtraction ones) for each group of numbers.

a.

6	4	10

b.

5	3	8

9. Show how you add and subtract numbers using doubles.

Two examples have been provided for you.

$$6 + 7 = 13$$

$$6 + 6 + 1 = 13$$

$$16 - 8 = 8$$

$$8 + 8 = 16$$

a. $8 + 9 =$

b. $8 + 7 =$

c. $14 - 7 =$

d. $20 - 10 =$

10. Use the number line to add and subtract.



a. $14 - 5 =$

b. $18 - 2 =$

c. $12 + 6 =$

d. $16 + 4 =$

11. Show how to add using tens. An example has been provided for you.

$8 + 5 =$

$10 + 3 = 13$

a. $9 + 7 =$

b. $8 + 3 =$

12. Add by counting on.

a. $16 + 4 =$

b. $17 + 6 =$

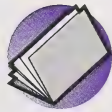
c. $12 + 11 =$

13. Subtract by counting back.

a. $15 - 3 =$

b. $19 - 2 =$

c. $13 - 1 =$



Go to Assignment Booklet 9B.

Day 18: I Know These Things, Too

That was great work you did! You are now ready to do the review of Modules 4, 5, and 6. There were many interesting activities in these modules, too.

Here's a difficult word—congruent. Do you remember congruent shapes? Elena and Jasper enjoyed their work with shapes. How about you? See what you can remember about shapes.





There are other important skills to review, such as measurement and money matters, too. Put your thinking cap on and away you go!



Lesson 1

This is a review of Modules 4, 5, and 6. See how well you remember what you learned.

1. Complete this chart.

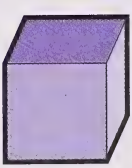
	Name this shape	Number of Sides	Number of Corners
a.		<div></div>	<div></div>
b.		<div></div>	<div></div>
c.		<div></div>	<div></div>
d.		<div></div>	<div></div>

2. Match the solid to its name.

cone



pyramid



sphere



cylinder



cube



3. Circle the unit of time you would use to measure these.

- | | | |
|---|---------|-------|
| a. the time it takes to sing "O Canada" | minutes | hours |
| b. the length of a field trip | minutes | hours |
| c. the time it takes to play a game of hockey | minutes | hours |
| d. the time it takes to brush your teeth | minutes | hours |

4. a. How many minutes are in an hour?

b. How many hours are in a day?

5. Look at this pattern.



a. Describe the pattern.

b. Draw pictures to represent the pattern.

c. Copy the pattern using sounds. Show what sounds you can use.

d. Copy the pattern using actions. Show what actions you can use.

6. Using your calculator. Press these numbers.

+ **5** **=** **=** **=** **=** **=**





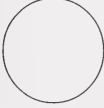
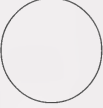


a. What will be the next five numbers to appear on the calculator screen?

,	,	,	,	,

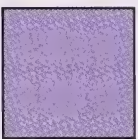
b. If you keep pressing **=**, which of these numbers will appear? Circle them.

42 55 56 61 65 74 75 80

7. Measure the length of each pencil. Order them from smallest to largest, 1 being the smallest.

			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
cm	cm	cm	cm
			

8. Estimate how many small squares will cover the large square.



My estimate:

small squares will cover the large square.

9. Give two examples of small objects that are heavier than larger objects.

- _____ is heavier than _____.
- _____ is heavier than _____.

10. a. one penny =

¢

c. one dime =

¢

b. one nickel =

¢

d. one quarter =

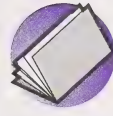
¢

11. a. two quarters = ¢ c. four quarters = ¢

b. three quarters = ¢

12. Draw a set of coins to make these amounts.

27¢	
83¢	



Go to Assignment Booklet 9B.

congratulations

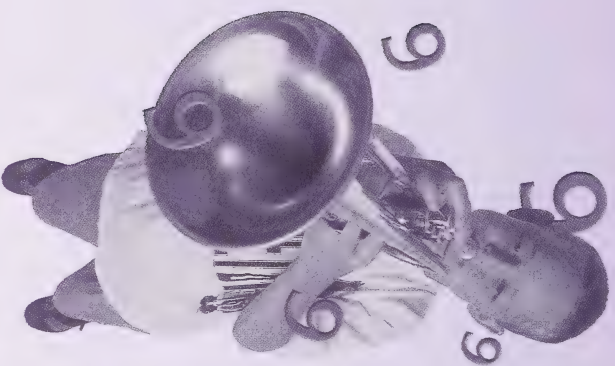


You have now completed Module 9: Fun with Fractions.

These are the things you learned:

- fractions: halves, thirds, and fourths
- how to give and follow directions by saying them
- how to give and follow directions in writing
- how to make symmetrical 2-D shapes by folding
- how to make symmetrical 2-D shapes by reflecting

The things you have learned in this module will make your life easier and much more interesting. You could plan a party or picnic. You can follow directions to get places better. With your new knowledge of fractions, you can plan any number of things!

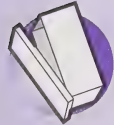


9

9

Days 2 to 4

Pattern Blocks



Take your pattern blocks out of your Math Box or use the paper ones in your Student Folder.

Find blocks that are one-half the size of others. Put the two halves together. Trace the blocks on a piece of paper and colour them. Colour each half a different colour. Make patterns across the page with the tracings. Here are two examples of how your blocks might look.

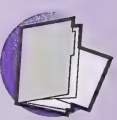


Extension Activities

Days 8 to 10

Activity 1

Matching Fractions



Take the Fraction Symbol Cards and the Fraction Picture Cards out of your Student Folder.

You can play this game with your home instructor or with a friend or family member.

The goal of this game is to match all the Fraction Symbol Cards with the Fraction Picture Cards. There are 20 cards of each. Put the Fraction Picture Cards in one pile face down and the Fraction Symbol Cards in another pile face down. Take turns with your partner turning one card over from each pile. If the two cards match, you say the fraction they show and keep the two cards. If the cards do not match, put them back into the two piles face down at the bottom. The game ends when all the cards in the two piles are gone. The player who has the most cards wins.

Activity 2



Take the Fraction Picture Cards out of your Student Folder. Sort the cards into three piles: halves, thirds, and fourths.

Activity 3

Spinner Fraction Game



Take the Spinner Fraction Game boards out of your Student Folder.



Take about 40 counters out of your Math Box.

Play the Spinner Fraction Game with a partner. Here's what you do.

- You and your partner and you each select a game board.
- Take turns spinning the spinner.
- Whichever fraction turns up, cover a matching shape with a counter.
- The first player to cover all the shapes on the game board is the winner.

If you wish to play a longer game, cover only one part of a shape for each spin.

Extension Activities

Activity 4

Fraction Sidewalk Game



Take the Fraction Sidewalk Game and the Fraction Picture Cards out of your Student Folder.



Take 2 counters out of your Math Box.

Play this game with a partner.

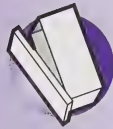
Put the Fraction Picture Cards in a pile face down. Take turns with your partner turning over a card. Move your counter to the nearest spot on the sidewalk that shows the same fraction your card does. The first player to reach the finish line wins.

Activity 5

Sharing Pies



Take the sheet of pies out of your Student Folder.



Take your scissors out of your Math Box.

You're going to cut out each pie. Then you're going to cut each pie into equal pieces to share with a different number of people. Yum yum! It will help if you draw how you will cut the pies first.

- Cut one pie to share equally between two people. The two slices will be halves.
- Cut another pie to share equally among three people. The three slices will be thirds.
- Cut another pie to share equally among four people. The four slices will be fourths.
- Cut another pie to share equally among five people. The five slices will be fifths.
- Cut another pie to share equally among six people. The six slices will be sixths.

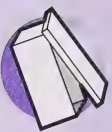
Extension Activities

Activity 6

Fraction Bingo



Take the Bingo Cards and the Fraction Symbol Cards out of your Student Folder.



Take 50 counters or bingo chips out of your Math Box.

Play this game with a partner.

Place the Fraction Symbol Cards and the Fraction Picture Cards in a pile face down. Take turns with your partner being the caller. The caller takes the top card on the pile, says it out loud, then places the card face down on the bottom of the pile. As each fraction is called, you each place a counter on the square that matches it on your card. Play until one player gets one straight line, four corners, two lines, an X, fills the card, or whatever you choose.

Days 11 to 13

Activity 1

Make a Building

Follow the directions to make a building. Draw and colour the building on a separate piece of paper.

- The building is six stories high.
- There are four squares in each storey.
- The third storey is the same colour as the first storey.
- The second storey and the sixth storey are green.
- The first storey is blue.
- The fifth storey is the same colour as the second storey.
- The fourth storey is the same colour as the third storey.

Activity 2

Hide and Seek

Print directions for a friend or family member to find something you have hidden in a room. For example, you can hide a book under your bed or a cup behind the sofa.

Your directions can say, “Take three steps forward from the door. Then turn right and take five steps,” and so on. Have the person read the directions first and see if he or she can figure out where the path leads. Then that person follows your directions to see if he or she was right!

Extension Activities

Activity 3

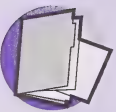
Find the Room

Print directions on a card for friends or family members to find their way to another room in your house. Use directions like the ones in Activity 2.

Days 14 and 15

Activity 1

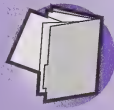
Poster Symmetry



Take coloured construction paper or regular paper out of your Student Folder.

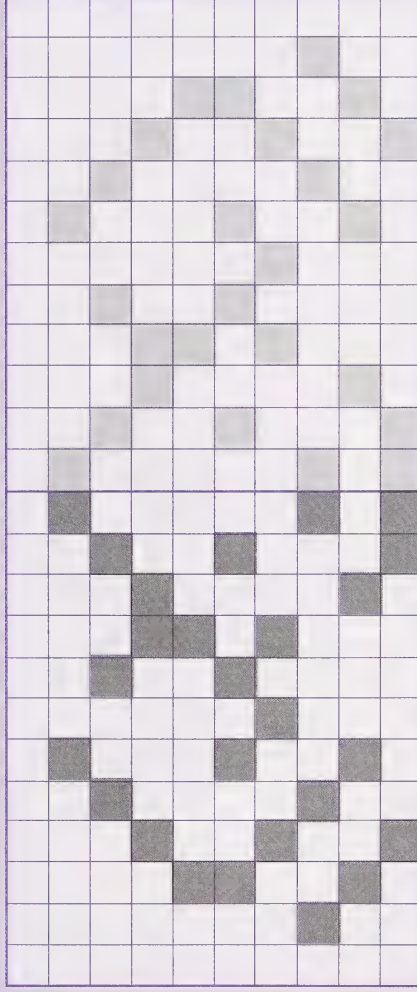
Make four or more symmetrical shapes with the paper by folding the paper. Colour the shapes you make with crayons if you use regular paper. Glue the shapes onto poster paper to display your symmetrical shapes. Make sure you glue just half the shape, so you can fold and unfold the shapes you made along the lines of symmetry.

Activity 2



Take some sheets of squared paper out of your Student Folder.

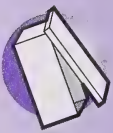
You will make symmetrical designs with crayons on squared paper. Cut out the squared paper. Fold the squared paper in half. Colour in the squares on half of the paper to make an interesting design. Then make the same design on the other half of the paper to make the two sides symmetrical. Display your design. You can make your own squared paper with a ruler to make more symmetrical designs.



Extension Activities

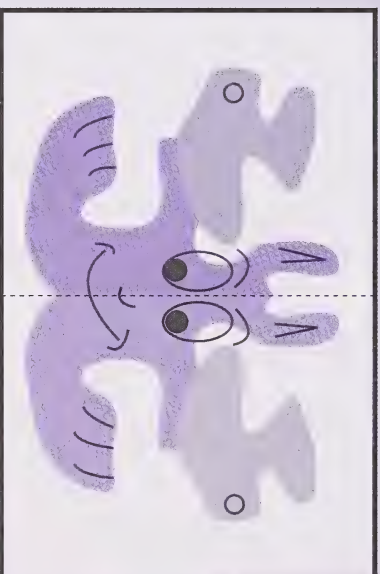
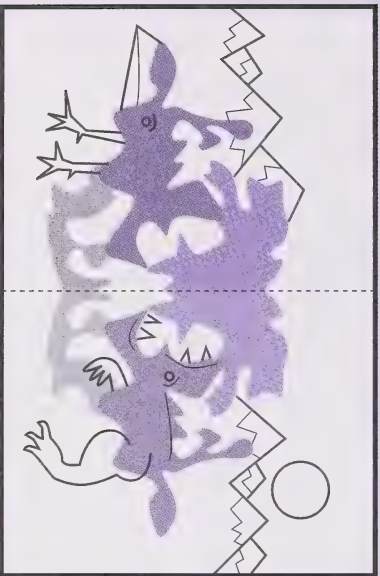
Activity 3

Symmetrical Paintings



Take your paints out of your Math Box.

Fold a piece of paper in half. Open the paper and put a blob of paint on one side. Put another coloured blob or two beside it. Fold the paper along the line of symmetry and rub gently. Open it up, and you will see that you have created a symmetrical design. Finish by painting or drawing a scene around the design.



Activity 4

Look through the magazines your home instructor has given you. Cut out symmetrical pictures. They can be pictures of people, animals, toys, or other objects. Cut them in half and glue them on a separate sheet of paper. Use your miraboard to make symmetrical pictures. Colour the pictures to finish them.

Activity 5

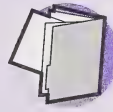
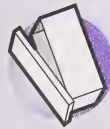


Select a manipulative from your Math Box.

Fold a piece of paper, open it, and then draw a line away from the line of symmetry to the outer edge of the page. Place the manipulatives you chose on the line. You may add a few of the manipulatives to the line going crosswise. When you finish your pattern, make the same line and pattern on the other side of the line of symmetry. Make a symmetrical pattern. Use the miraboard to check your work.

Activity 6

Symmetric Patterns



Take your pattern blocks out of your Math Box or use the paper ones in your Student Folder.

Make symmetrical designs with a friend or family member. Take turns making the first design. Fold a paper in half. Open it, and create a design with pattern blocks on half the paper. Have your partner create a matching symmetrical design on the other half of the paper. Use a mirror or miraboard to check the symmetry of your design.

COURSE SURVEY FOR GRADE TWO MATHEMATICS

(© 2001)

After you have completed the assignments in this course, please fill in this questionnaire with the help of your home instructor. Your home instructor can help you read the directions and write some of the answers for you.

Your honest thoughts about the course are appreciated. They will help improve the course for future students. Please mail the completed questionnaire to the address given on the last page.

Part A: About Yourself

Your name: _____

Your age: _____

Your distance education school: _____

Your distance education student number: _____

Part B: About the Course

On each line, print an "X" under the words that describe what you think.

1. How difficult did you find this course?

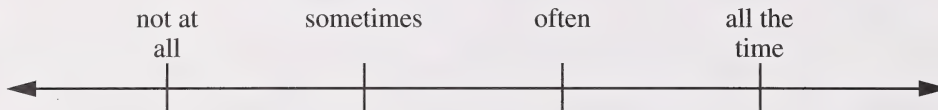


2. How well could you follow the instructions and explanations in the modules?

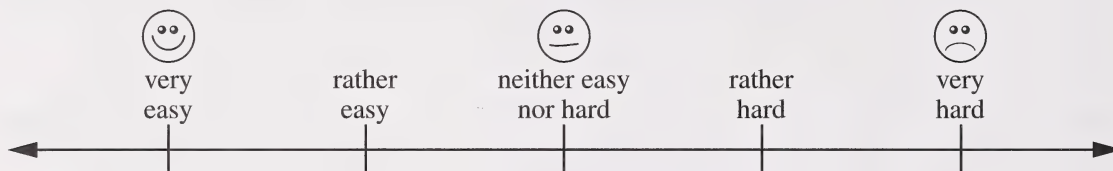


3. The Internet may have been mentioned in your course as an optional research tool or for optional activities.

How often did you use the Internet to complete this course?



4. How easy or hard was the Internet to use as directed by the instructions in this course?



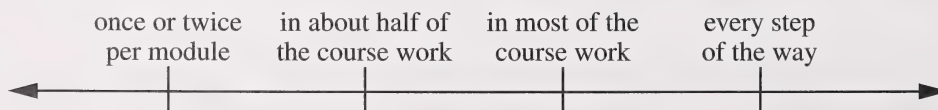
5. If someone helped you with parts of the course, answer the following questions:

a. Who helped? (parent, friend, etc.) _____

b. What did this person do to help? _____

c. In which parts did this person help you the most? _____

d. How much did this person help you?



8. Tell us any other ideas you have to make this course better.

7. The part of this course that needs improving most is _____

6. The best thing about this course is _____

9. If you have completed or almost completed another distance education (DE) course within the past year, complete the following chart. If you have done a few distance education courses recently, please choose a course that is similar to this course.

Print the names of the courses in the following chart. Then put a check mark (✓) in each column to show what you think.

Comparison Between DE Courses	Took More Time	Was More Difficult	Was Better Written	Was More Enjoyable
Name of this course:				
Name of other DE course:				

Thanks for taking the time to complete this questionnaire. Your feedback is important to us. Please return this questionnaire to the address on the right.

Learning Technologies Branch
Box 4000
Barrhead, Alberta
T7N 1P4

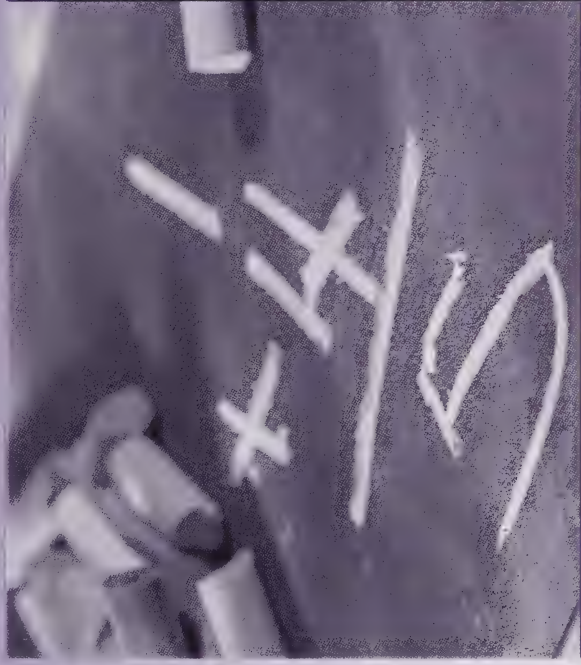
If you are enrolled at the Alberta Distance Learning Centre and have been mailing your Assignment Booklets to ADLC, you may return this questionnaire with the final Assignment Booklet in the course.

Appendix

Image Credits
Shapes to Fold in Half
Dot Paper
Grids

Shapes to Fold into Fourths
Fraction Symbol Cards
Fraction Picture Cards
Spinner Fraction Game Board
Fraction Sidewalk Game
Pies

Bingo Cards
Symmetrical and Non-Symmetrical Shapes
Squared Paper



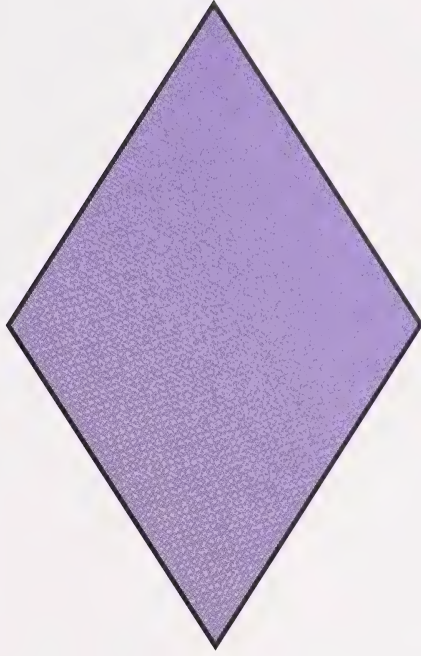
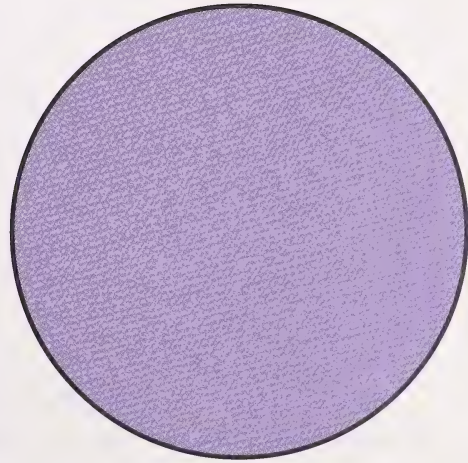
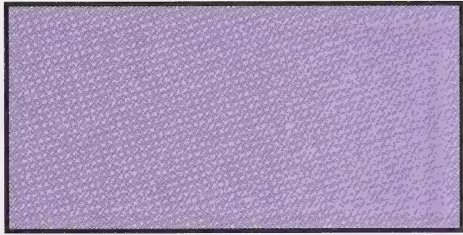
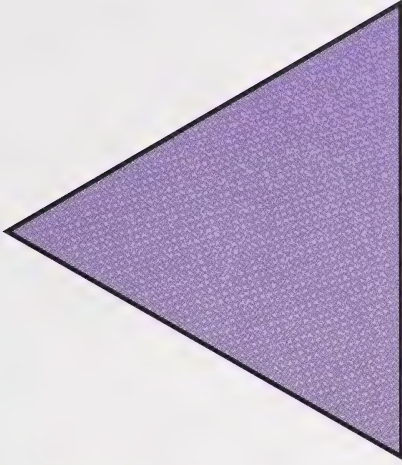
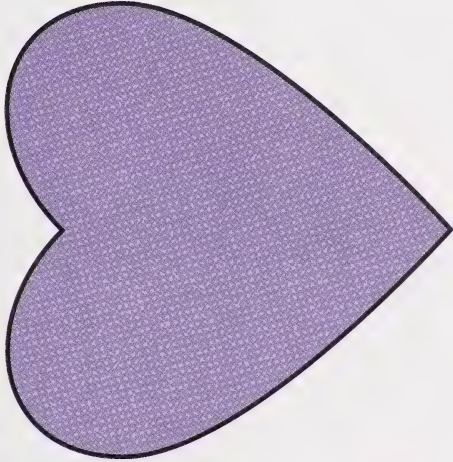
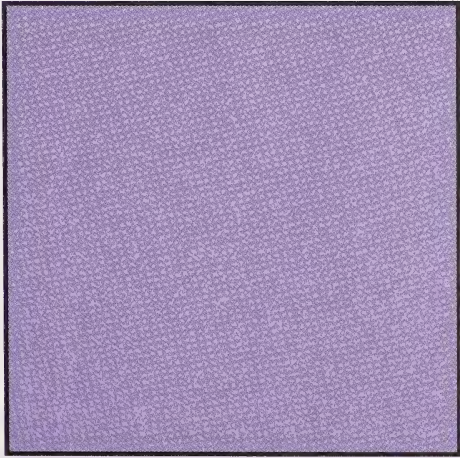
Appendix

Image Credits

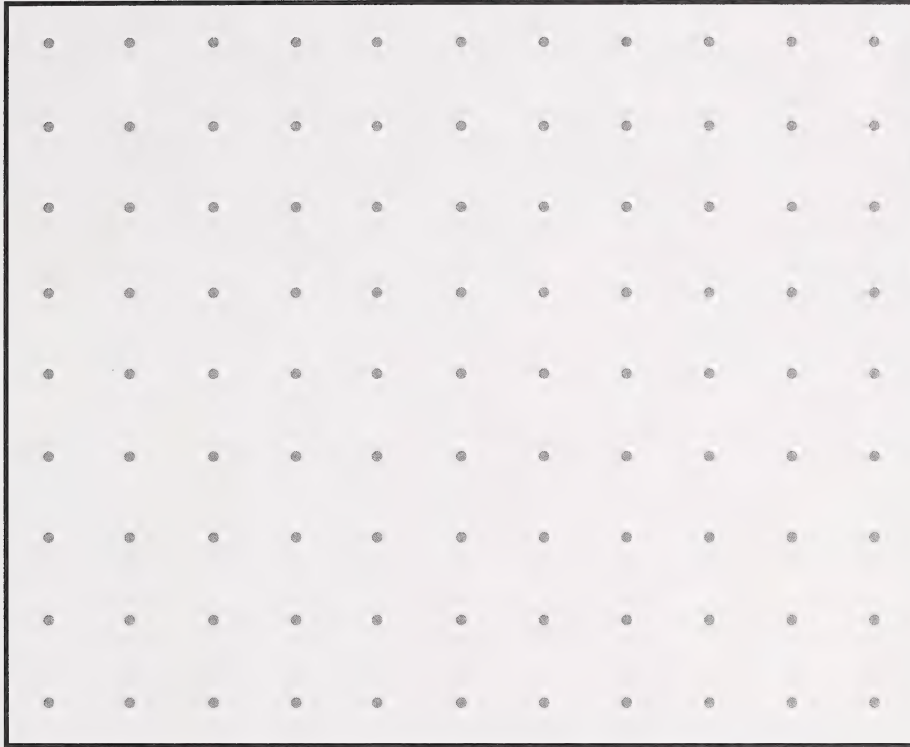
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Page			
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2	right: ©2000–2001 www.arttoday.com		
3	left: ©2000–2001 www.arttoday.com		
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19	©2000–2001 www.arttoday.com	54	Image club Photogear
21	©2000–2001 www.arttoday.com	59	Photodisc, Inc.
31	EyeWire, Inc.	64	EyeWire, Inc.
37	Photodisc, Inc.	73	Photodisc, Inc.
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		123	Photodisc, Inc.
		130	both: ©2000–2001 www.arttoday.com
		138	Photodisc, Inc.
		145	EyeWire, Inc.
		157	Guided Education Program: Living History at Russia School, Ukrainian Cultural Heritage Village role-player teacher and Brookwood Elementary School Students, June 8, 2001.
		174	Photodisc, Inc.; EyeWire, Inc.
			Appendix title page: EyeWire, Inc.

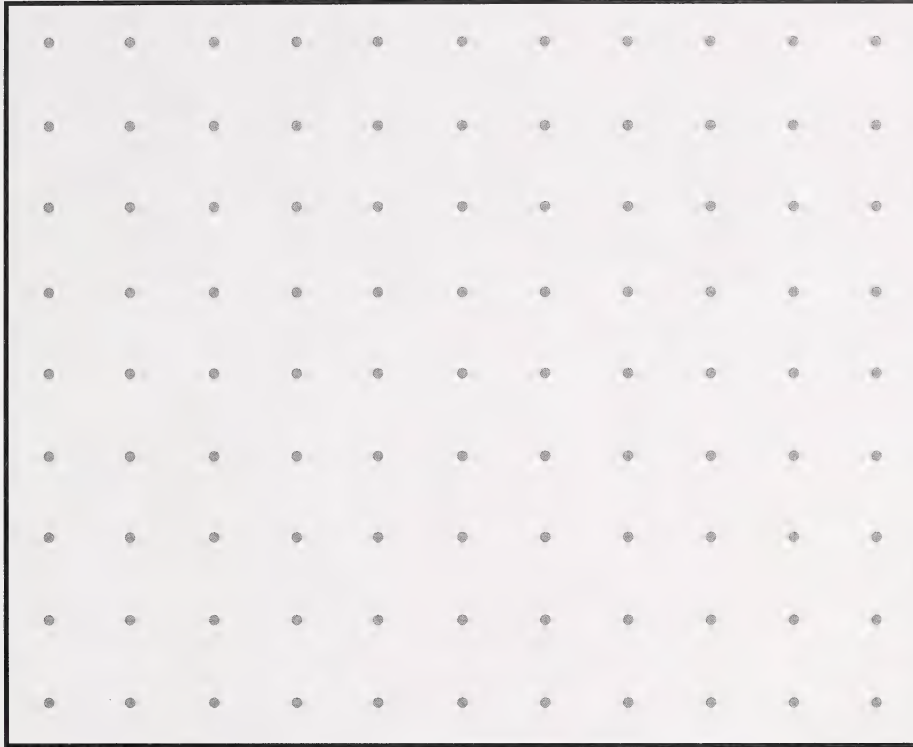
Shapes to Fold in Half



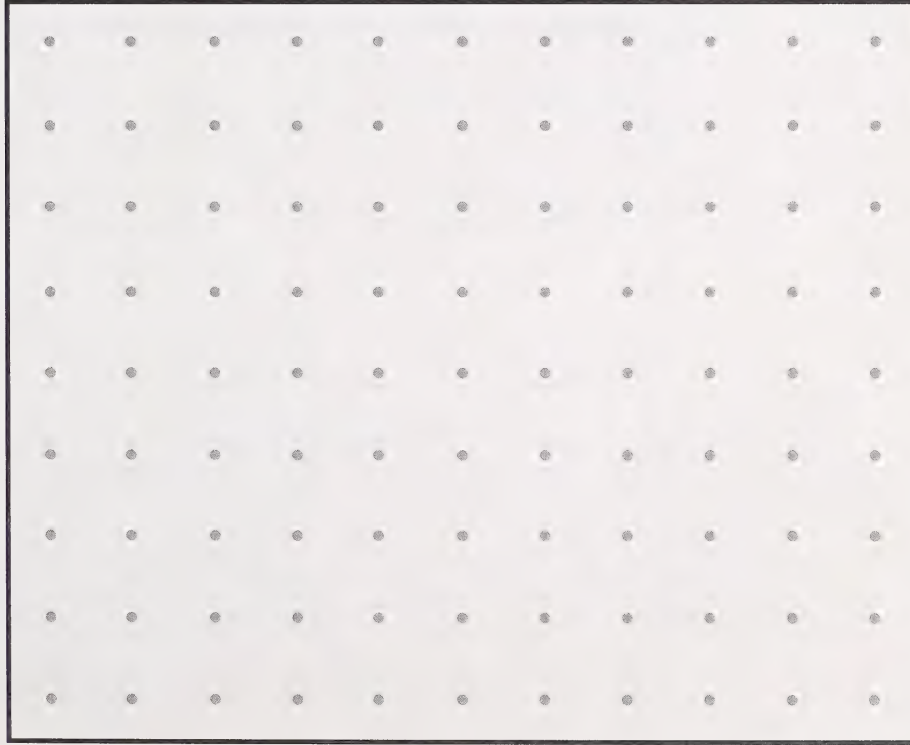
Dot Paper



Dot Paper



Dot Paper



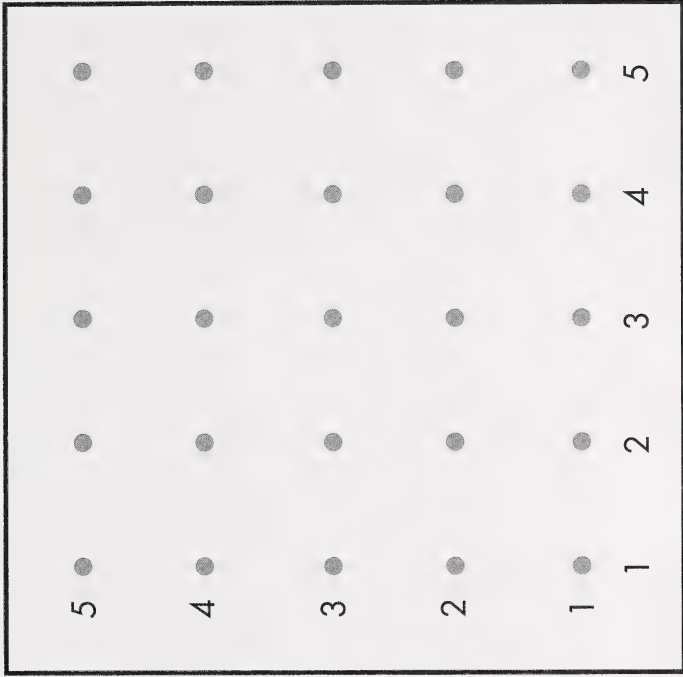
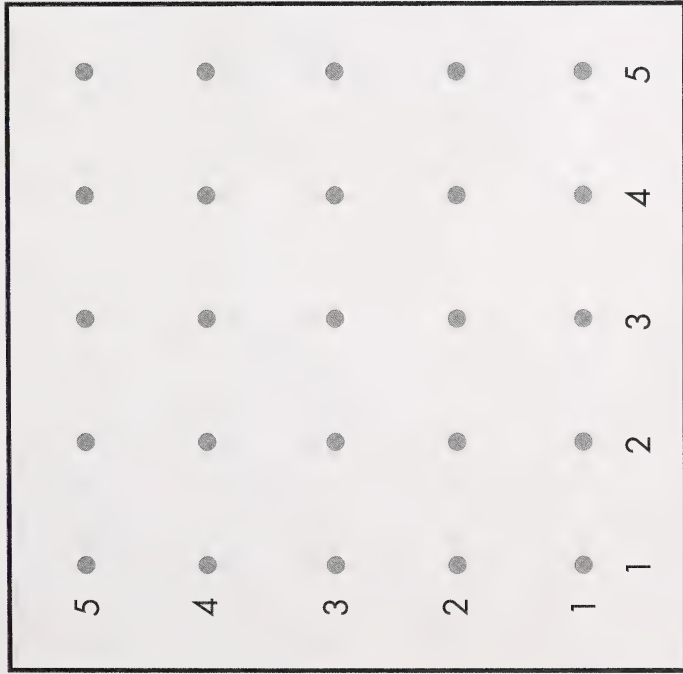
Grids

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4	•	•	•	•	•	•
3	•	•	•	•	•	•
2	•	•	•	•	•	•
1	•	•	•	•	•	•
	1	2	3	4	5	

5	•	•	•	•	•	•
4	•	•	•	•	•	•
3	•	•	•	•	•	•
2	•	•	•	•	•	•
1	•	•	•	•	•	•
	1	2	3	4	5	



Grids



Grids

5	•	•	•	•	•	•
4	•	•	•	•	•	•
3	•	•	•	•	•	•
2	•	•	•	•	•	•
1	•	•	•	•	•	•
	1	2	3	4	5	

5	•	•	•	•	•	•
4	•	•	•	•	•	•
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	1	2	3	4	5	



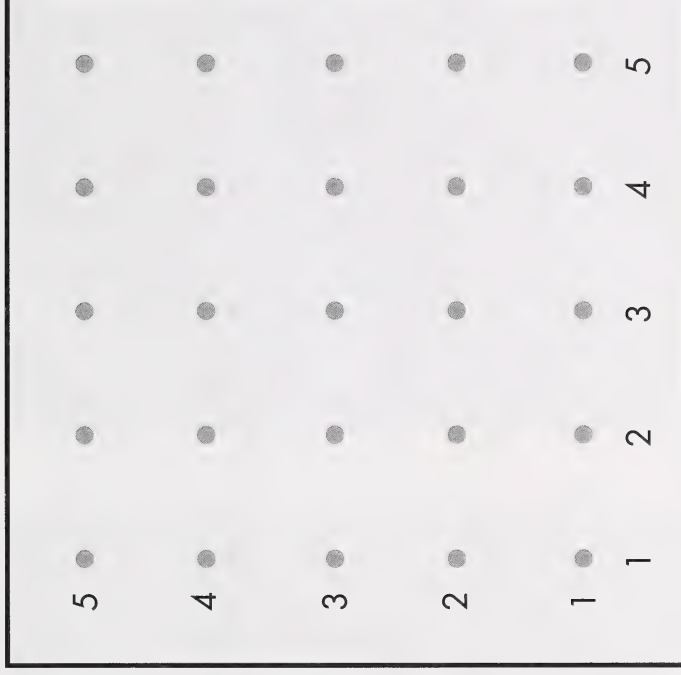
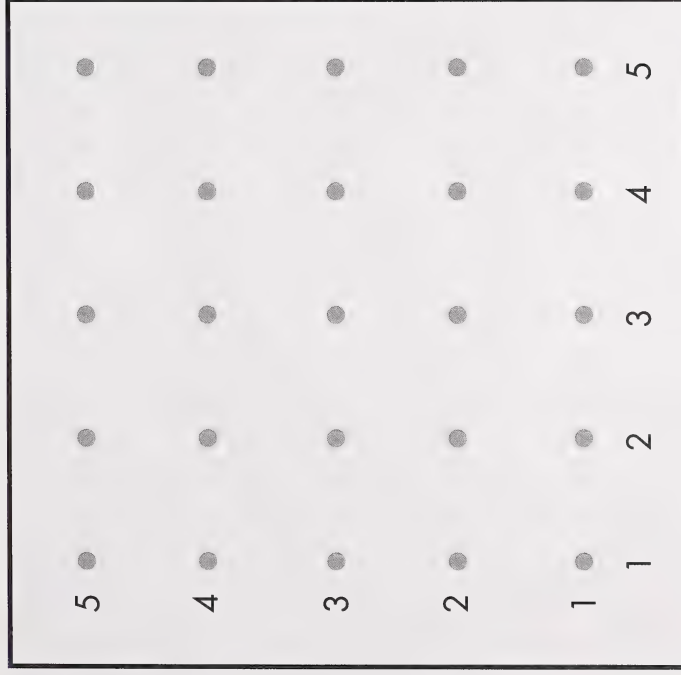
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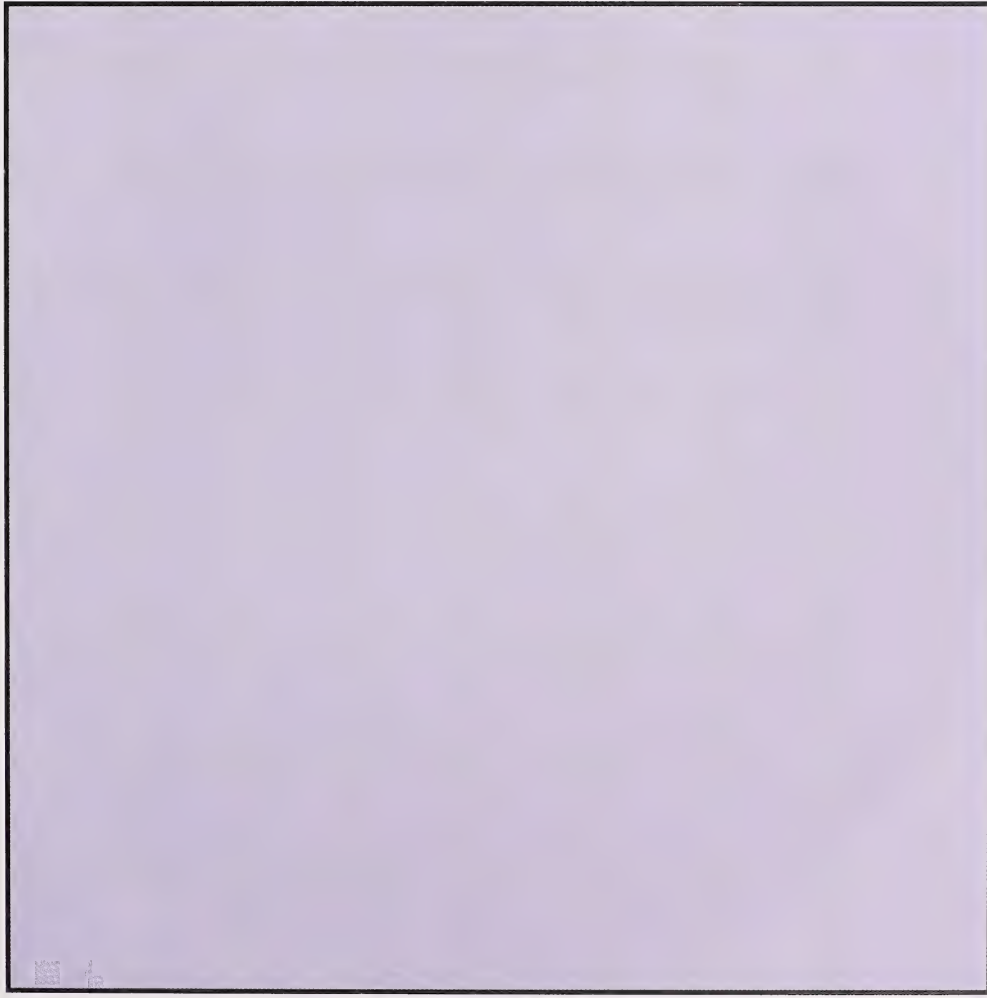
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1	•	•	•	•	•	•	•	•	•
	1	2	3	4	5				



Grids

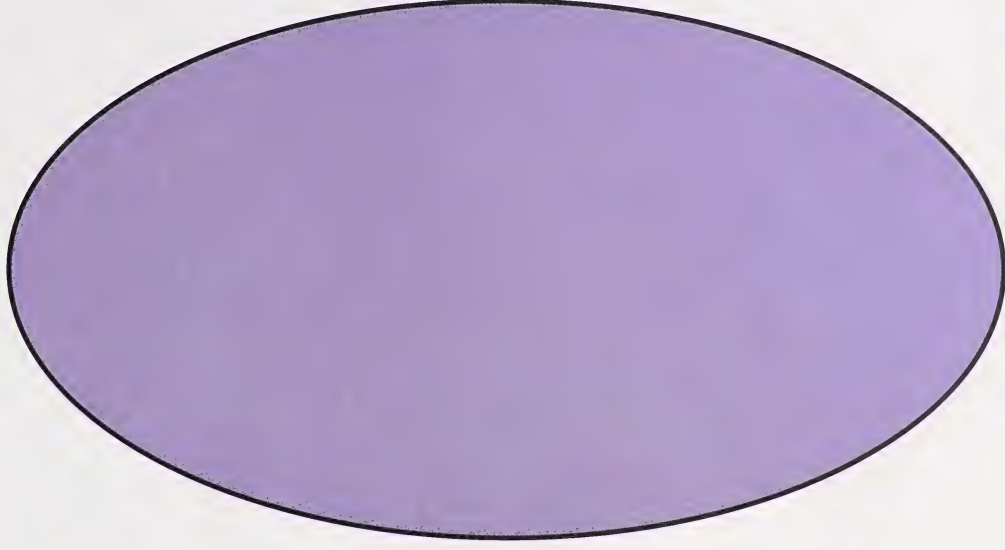
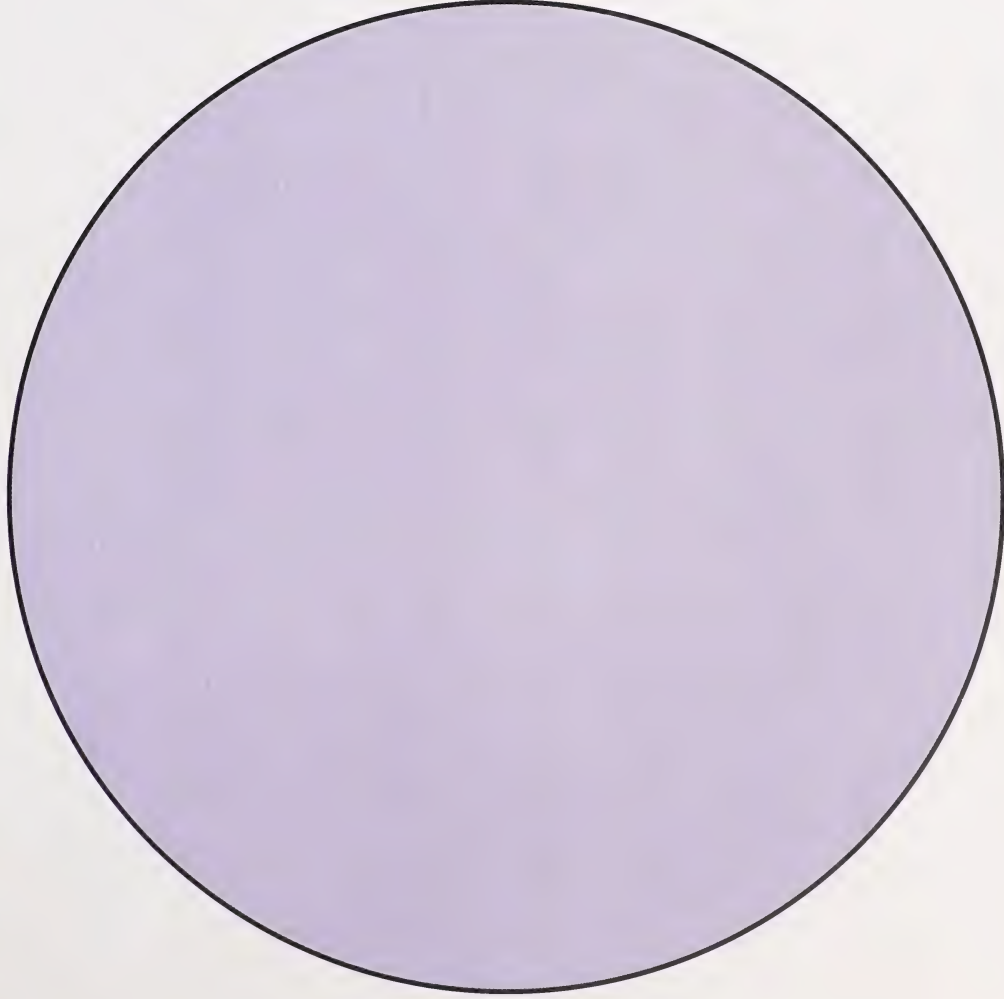


Shapes to Fold into Fourths





Shapes to Fold into Fourths



Fraction Symbol Cards

$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$




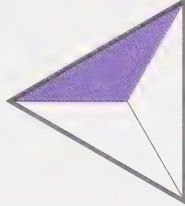

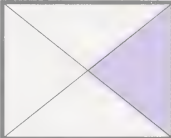
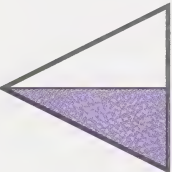

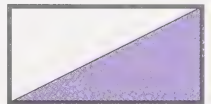
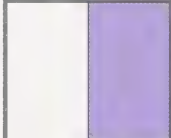

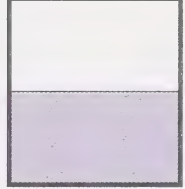
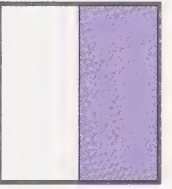


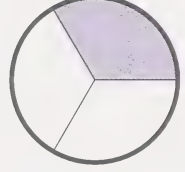

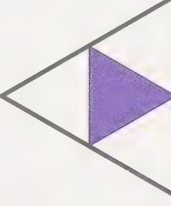
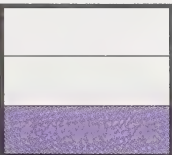
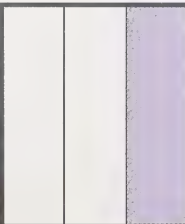
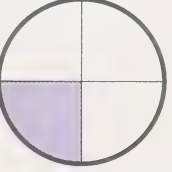

$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$
$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$	$1\frac{1}{3}$



$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$



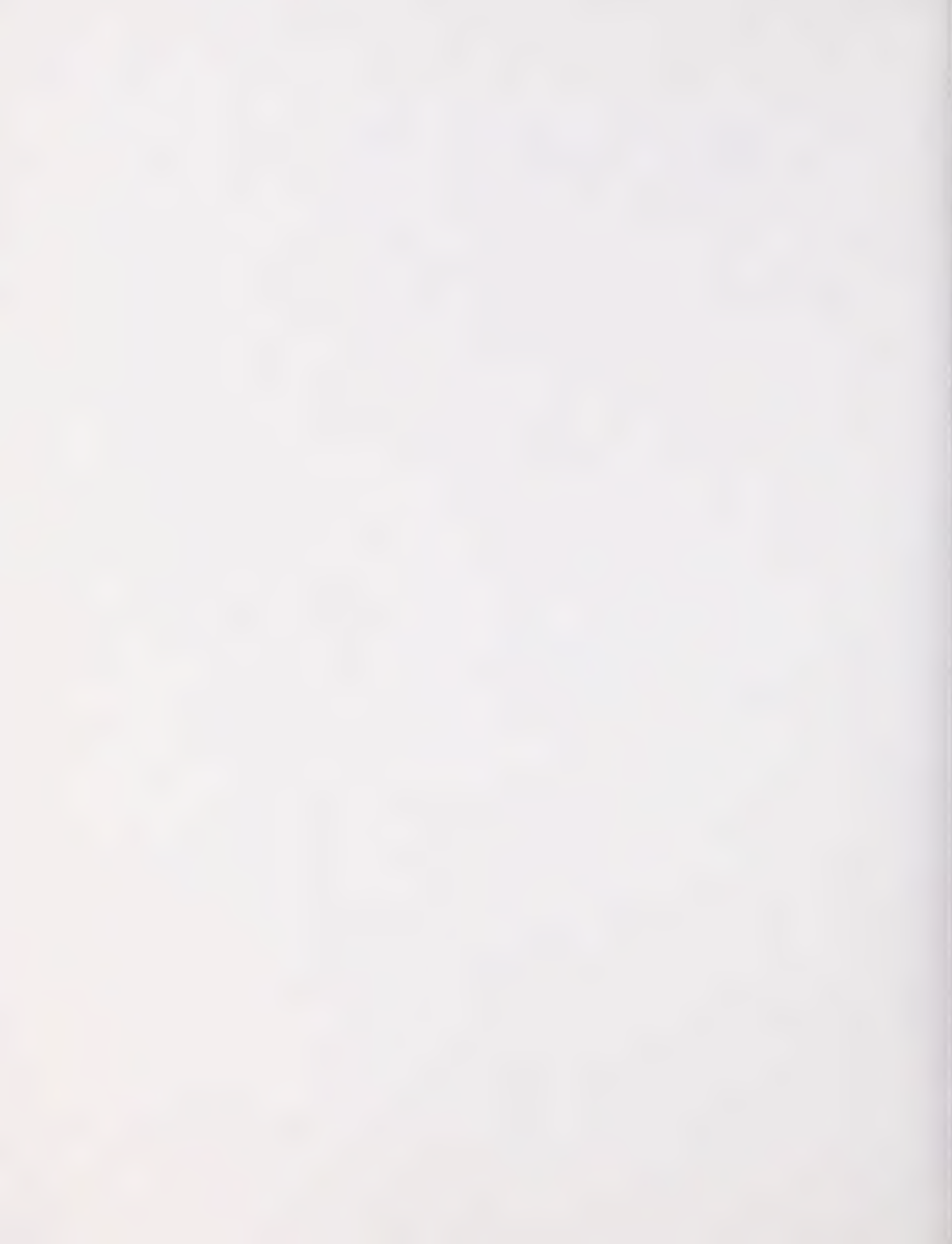
Fraction Picture Cards

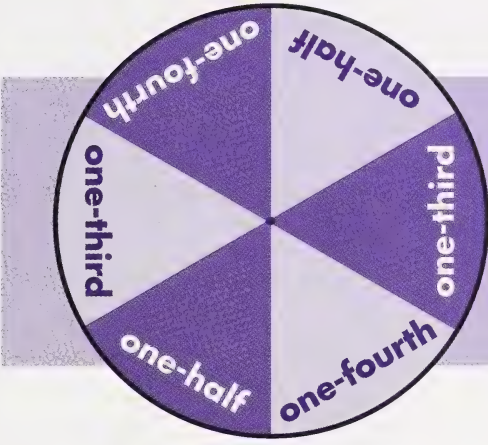


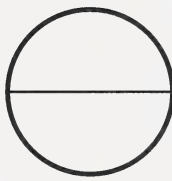


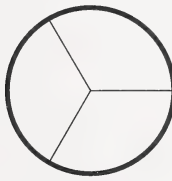
Fraction Picture Cards

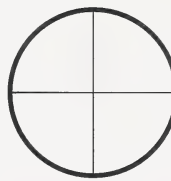


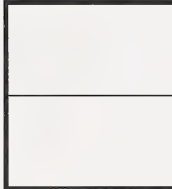
Spinner Fraction Game Board




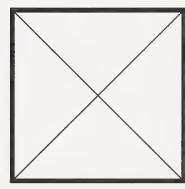





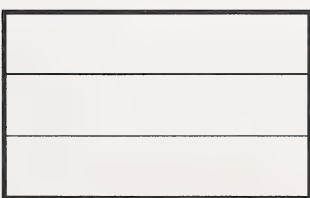









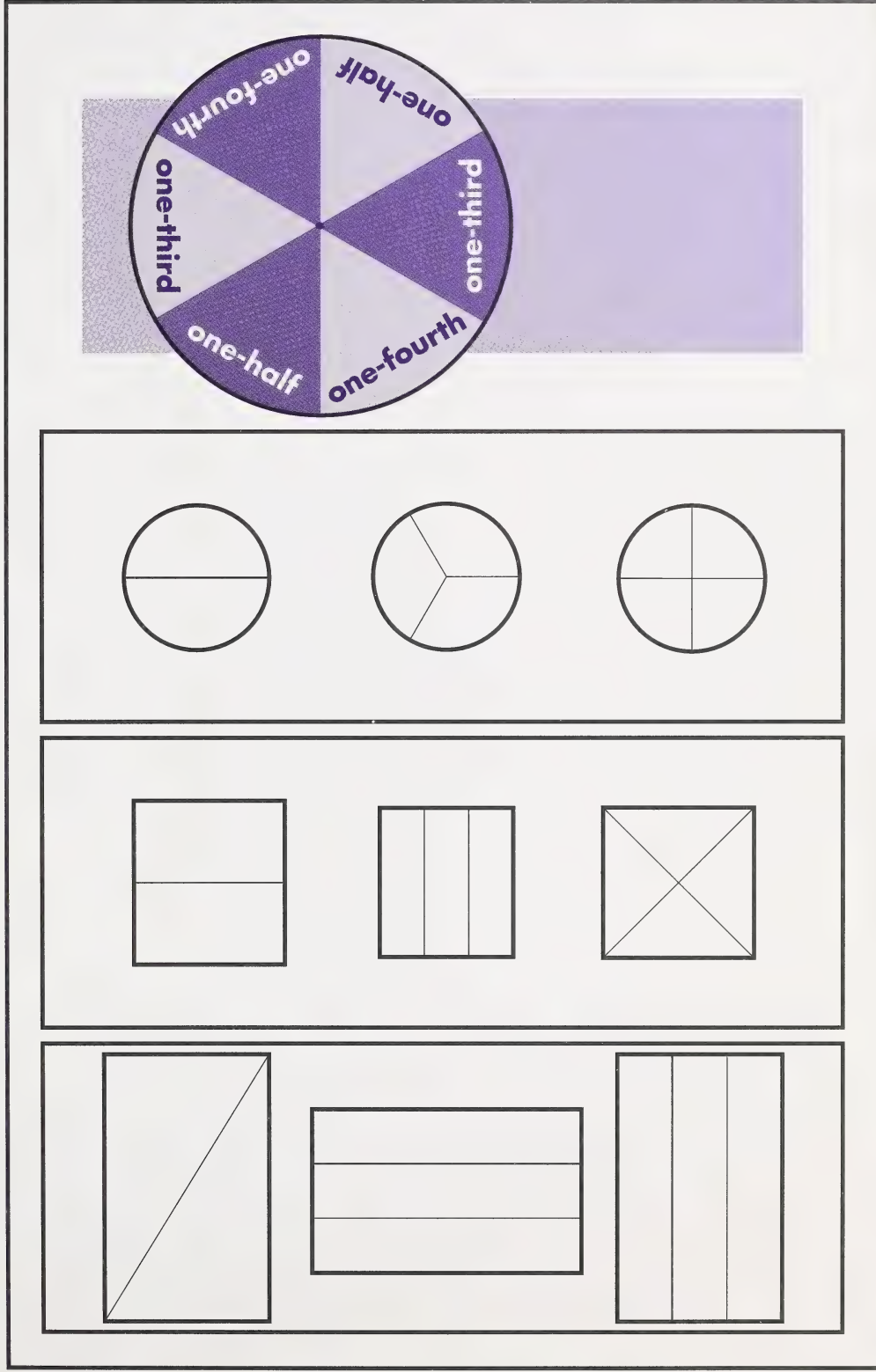




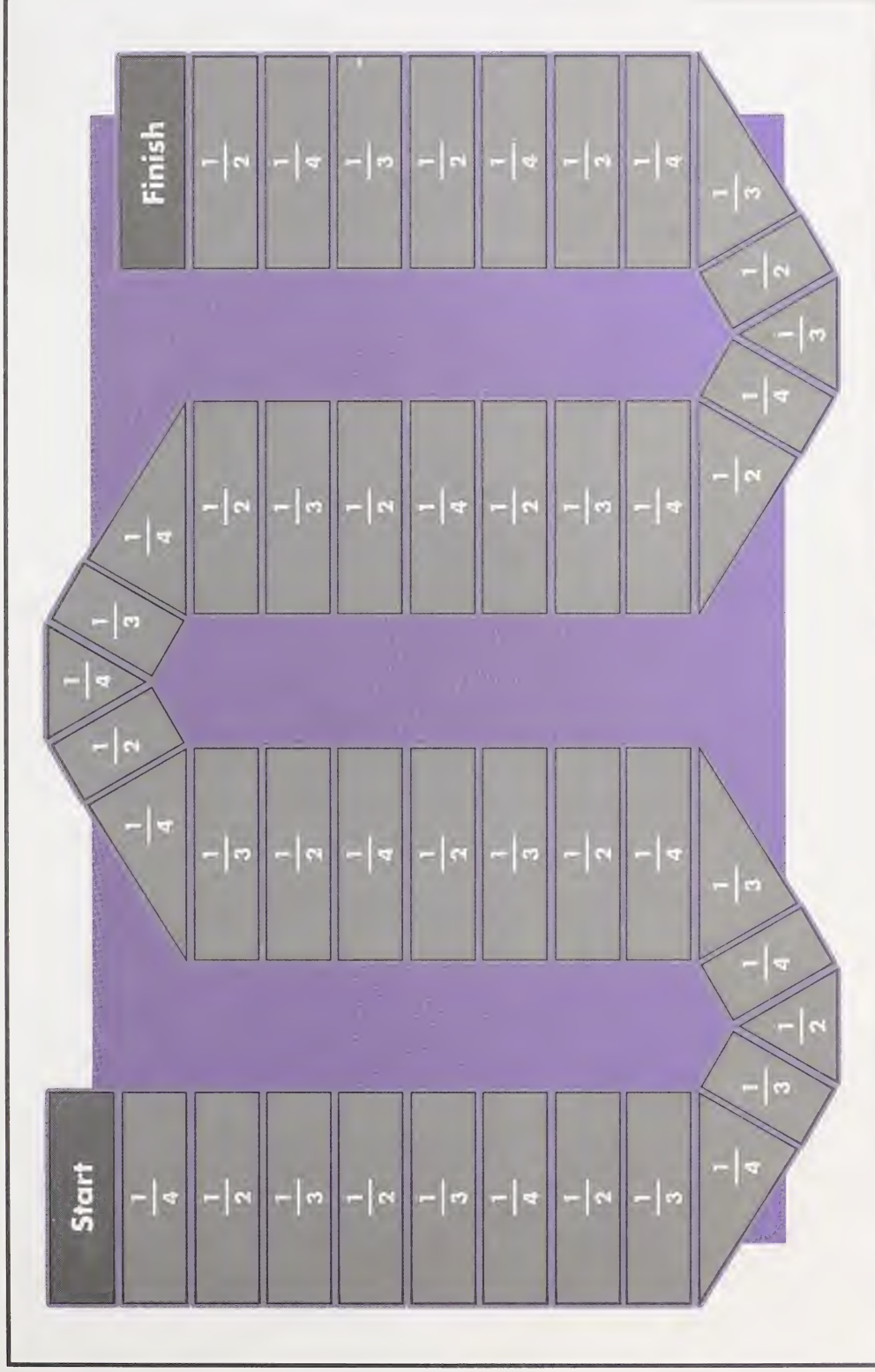




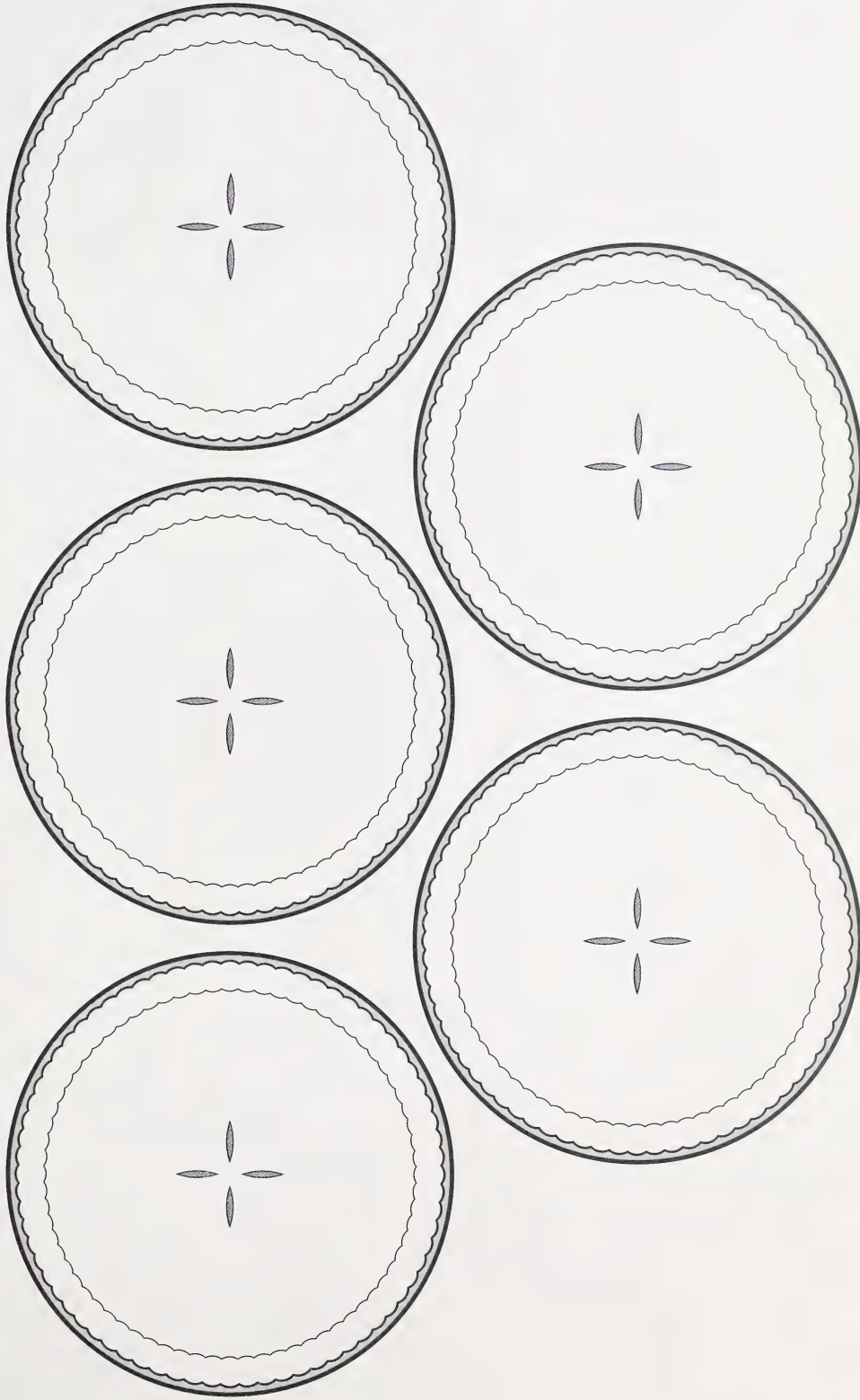
Spinner Fraction Game Board
















Fraction Sidewalk Game



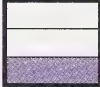



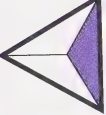






Pies
















Bingo Cards













	$\frac{1}{3}$		$\frac{1}{2}$	
	$\frac{1}{4}$		$\frac{1}{4}$	$\frac{1}{2}$
$\frac{1}{4}$		$\frac{1}{3}$		
	$\frac{1}{2}$		$\frac{1}{2}$	
$\frac{1}{3}$		$\frac{1}{3}$		$\frac{1}{4}$

$\frac{1}{3}$	$\frac{1}{4}$		$\frac{1}{4}$	
	$\frac{1}{2}$		$\frac{1}{4}$	$\frac{1}{3}$
$\frac{1}{4}$		$\frac{1}{2}$		
	$\frac{1}{2}$	$\frac{1}{4}$		$\frac{1}{4}$
$\frac{1}{3}$			$\frac{1}{3}$	$\frac{1}{2}$

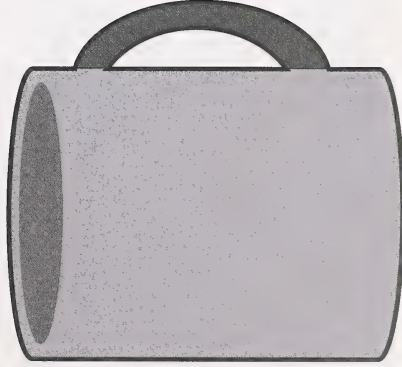
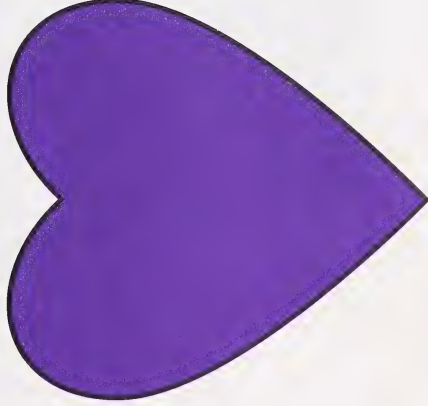
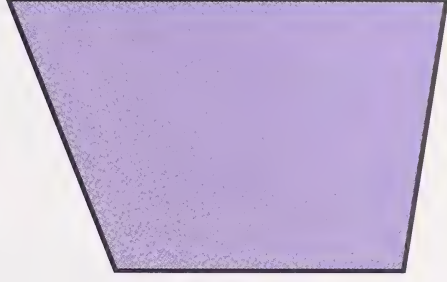
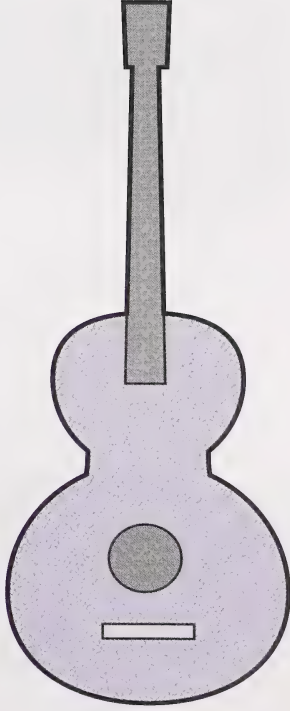
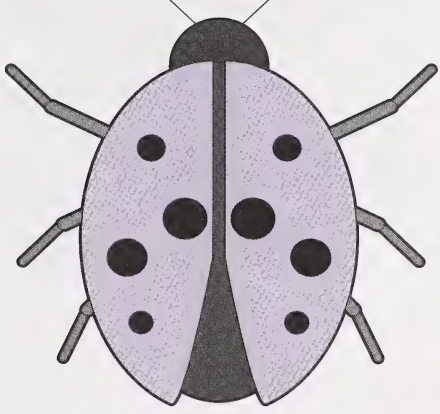


Bingo Cards

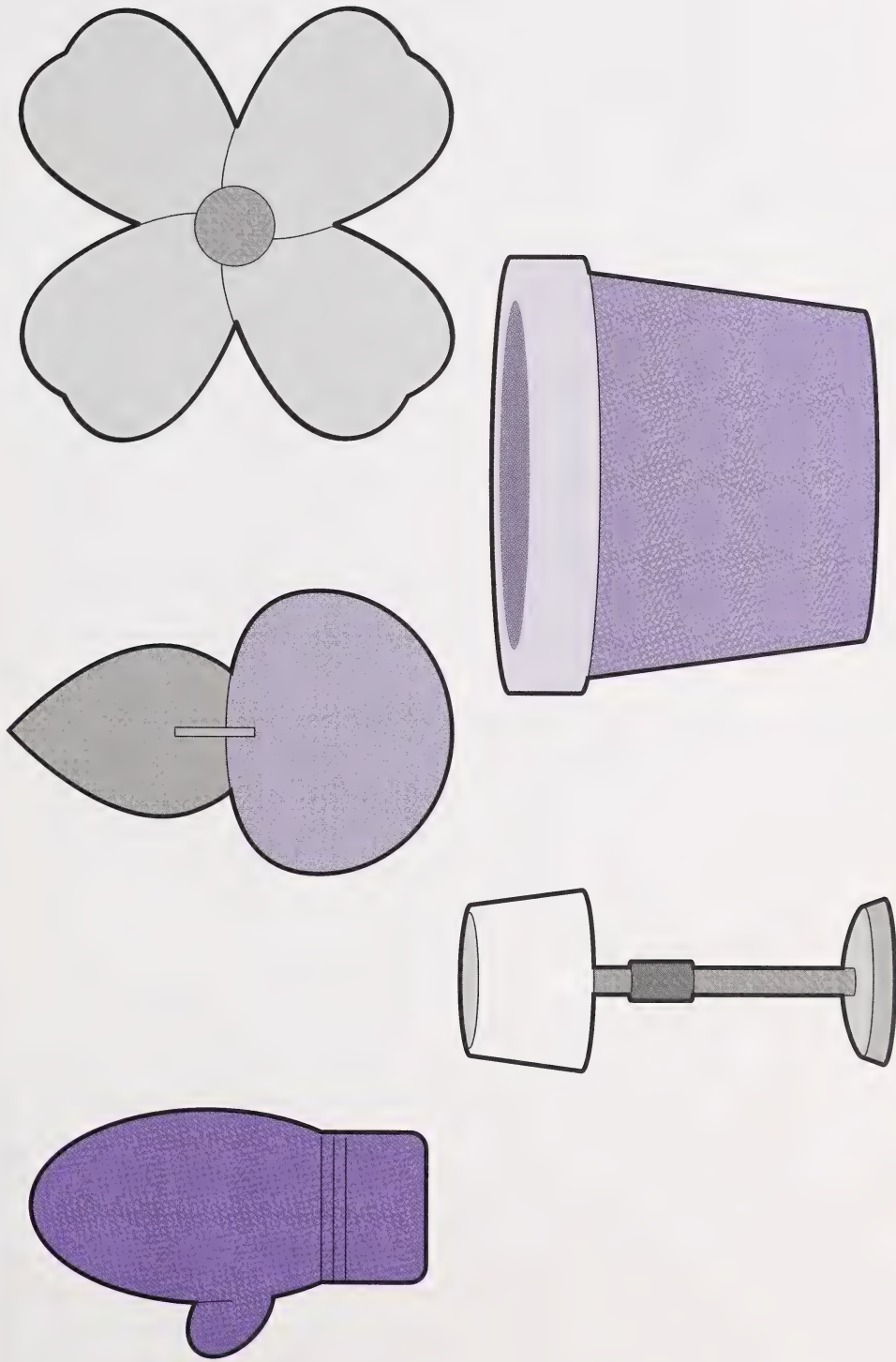
	$\frac{1}{3}$		$\frac{1}{2}$	
	$\frac{1}{4}$		$\frac{1}{4}$	$\frac{1}{2}$
$\frac{1}{4}$		$\frac{1}{3}$		
	$\frac{1}{2}$		$\frac{1}{2}$	
$\frac{1}{3}$		$\frac{1}{3}$		$\frac{1}{4}$

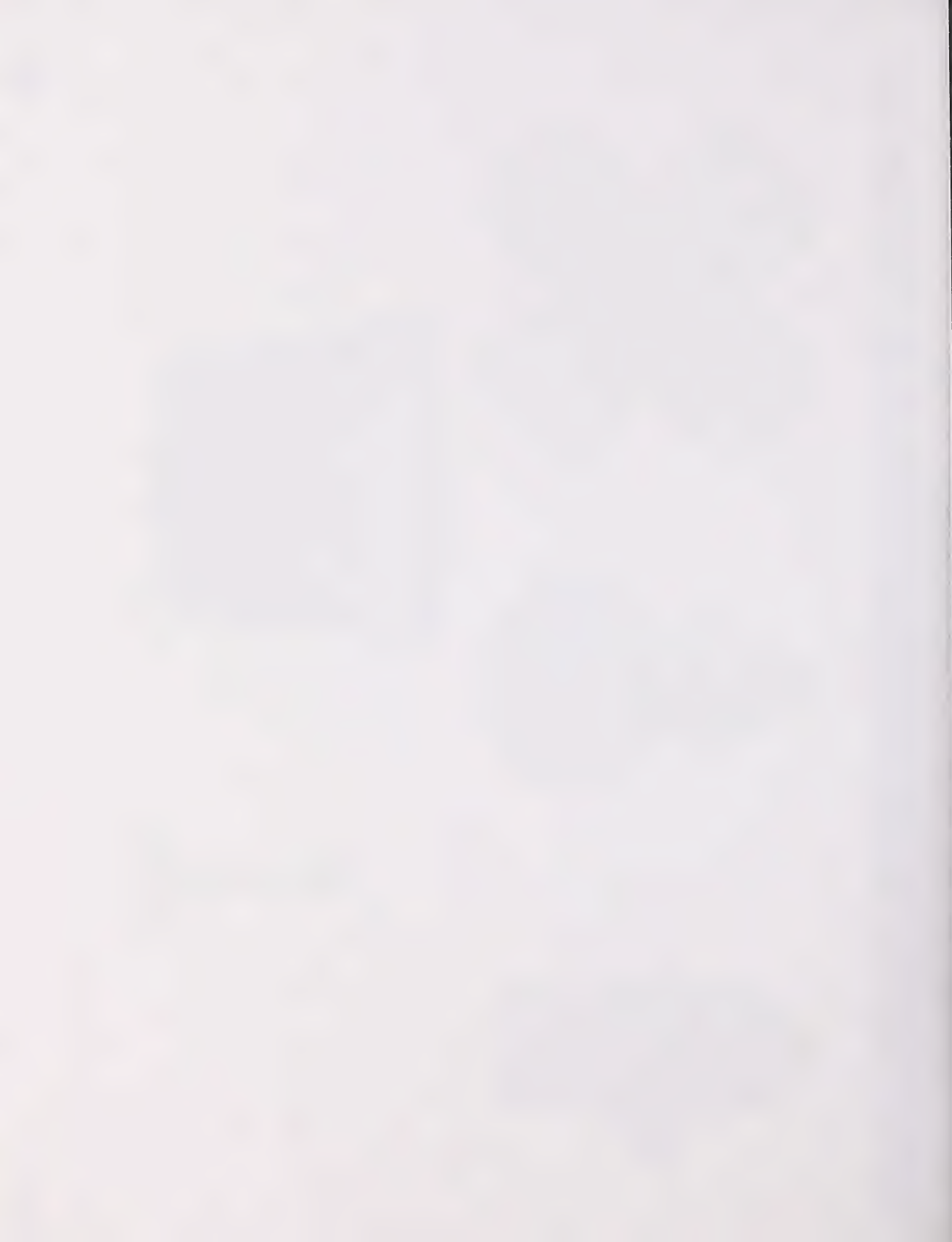
$\frac{1}{3}$	$\frac{1}{4}$		$\frac{1}{3}$	
	$\frac{1}{2}$		$\frac{1}{4}$	
$\frac{1}{4}$		$\frac{1}{2}$		
	$\frac{1}{2}$	$\frac{1}{4}$		$\frac{1}{4}$
$\frac{1}{3}$			$\frac{1}{3}$	$\frac{1}{2}$

Symmetrical and Non-Symmetrical Shapes

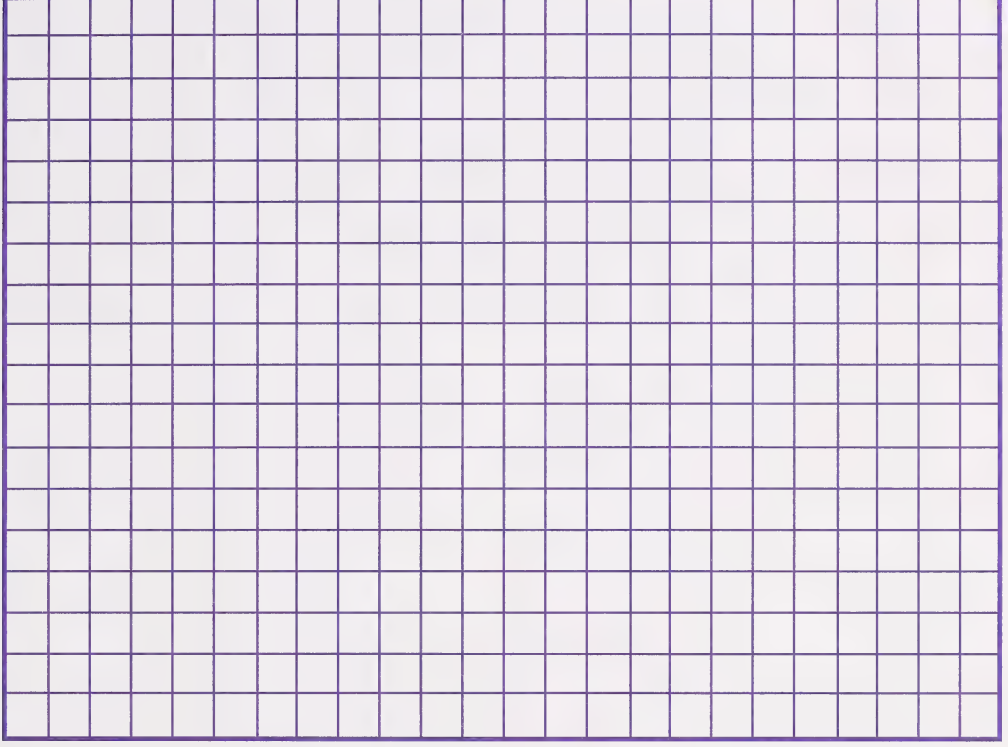
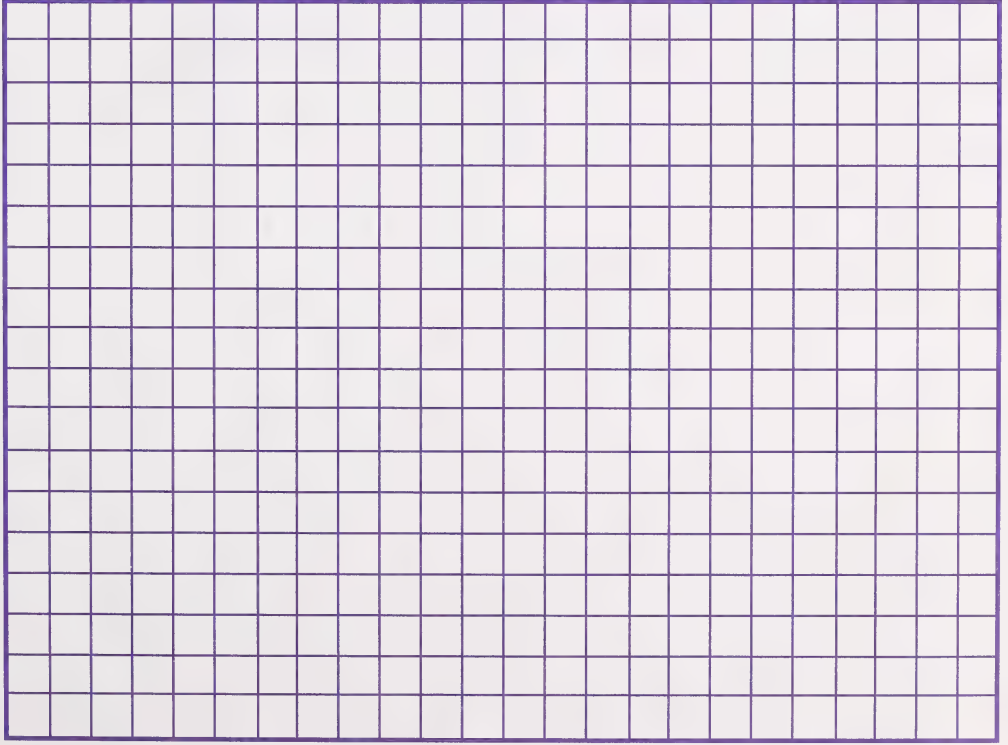








Squared Paper



Appendix

